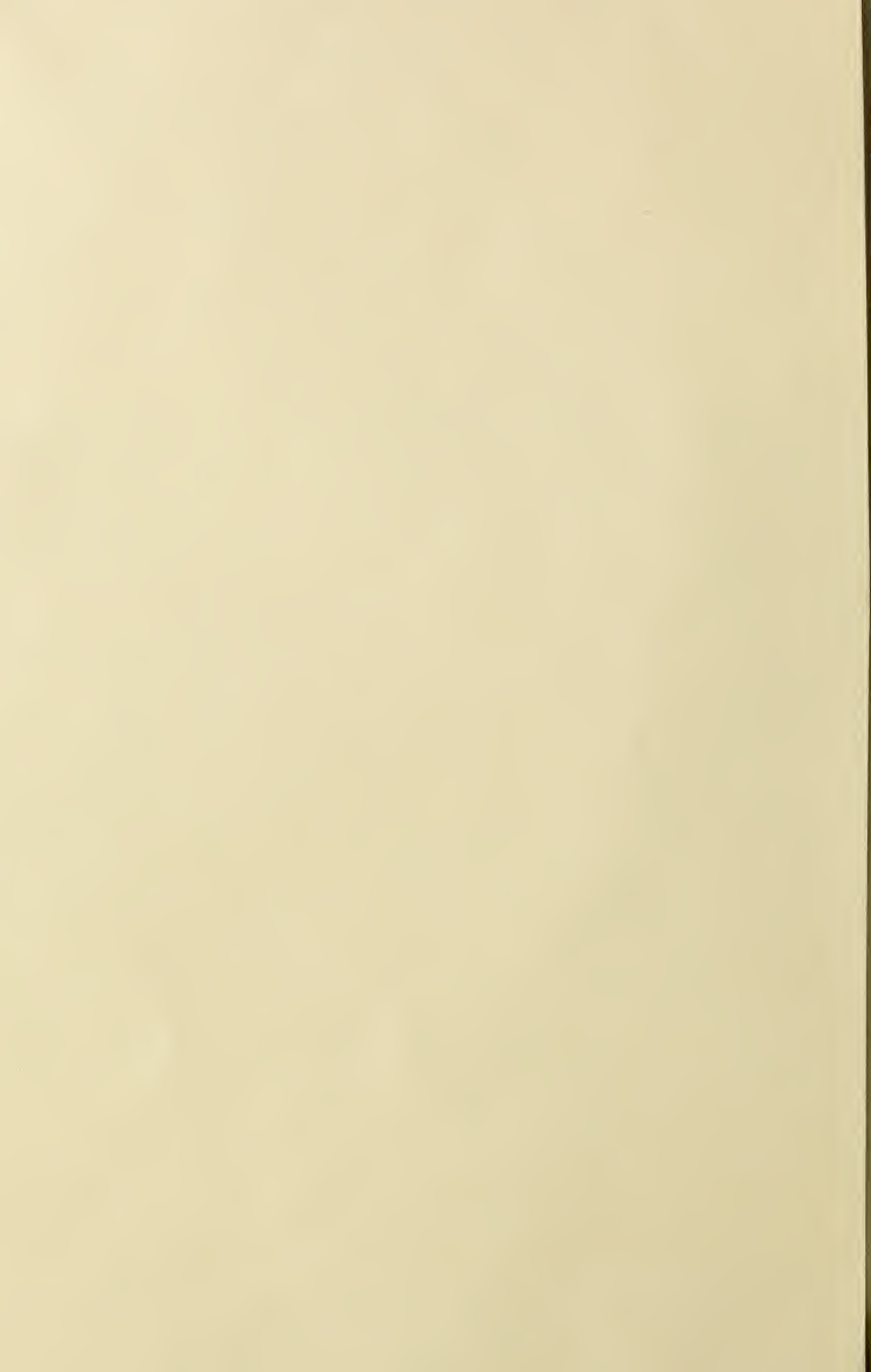


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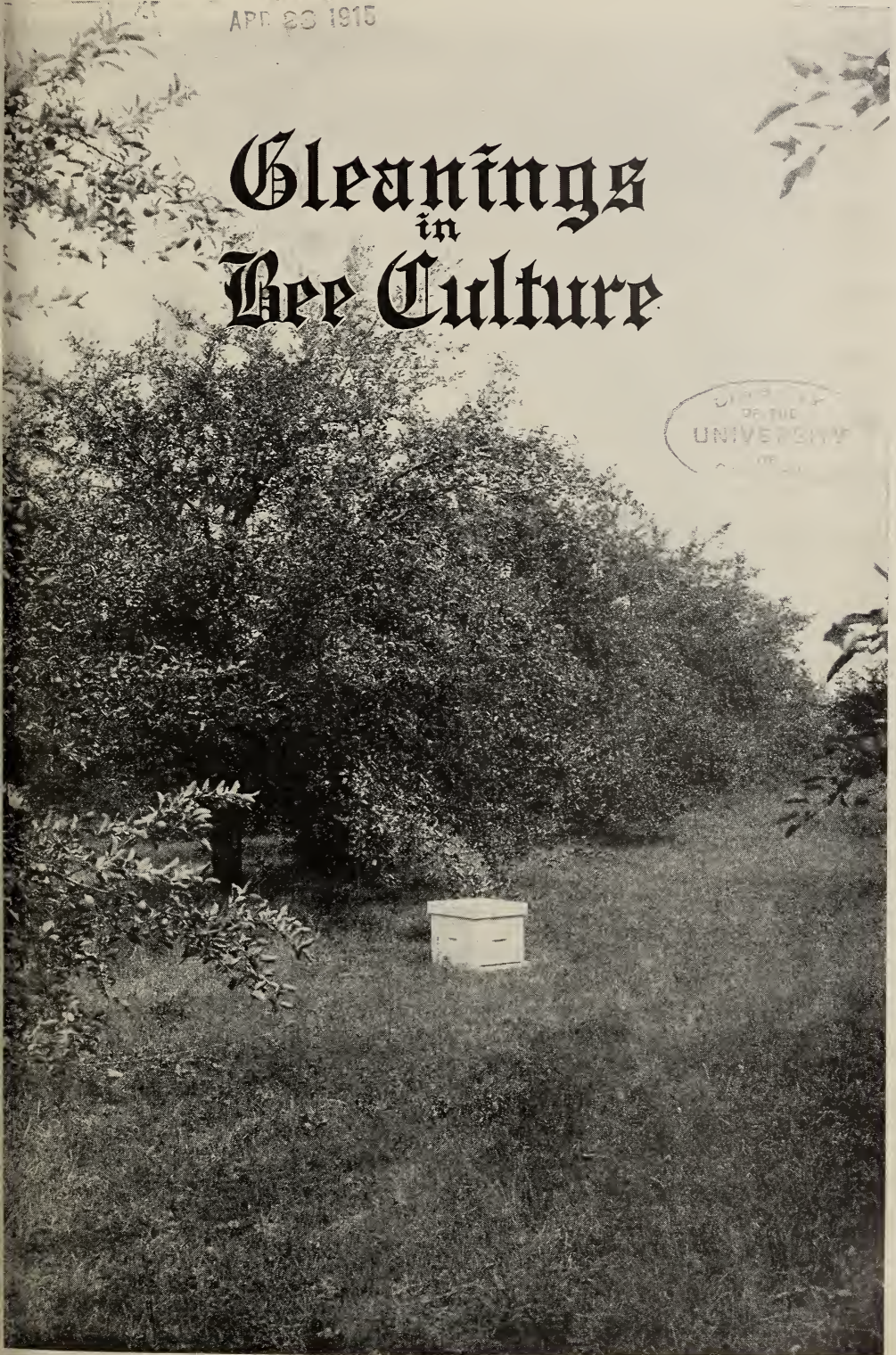
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Published by The A. I. Root Co., Medina, Ohio

A. I. ROOT, Editor Home Department
H. H. ROOT, Managing Editor

J. T. CALVERT, Business Manager
A. L. BOYDEN, Advertising Manager.
Entered at the Postoffice, Medina, Ohio, as second-class matter

VOL. XLIII.

APRIL 15, 1915

NO. 8

EDITORIALS

Our Dismal Swamp Apiaries

SINCE our last report, page 258, conditions at our Dismal Swamp apiaries have improved materially. The bad weather did not hurt us after all. Indeed, we begin to feel that we shall secure nearly the increase we set out to make in the first place. Our Mr. Pritchard reports that the bees are booming. More anon.

Wintering in Medina

INDICATIONS in Ohio show that the winter is not going to be as serious as we once feared it might be. The loss will be somewhere about 30 per cent, and that mainly in the colonies that had aster stores from the swamp. The bees, however, in big quadruple winter cases, no matter what the stores were, seem to be coming through in excellent condition.

Wintering over the United States

So far it has been a late, chilly, cold spring in the South as well as in the North. In many localities the season is estimated at from three weeks to a month late. There is danger that there may be some heavy winter losses of bees this year. If the cold spring continues, spring dwindling will doubtless get in its work. Please send in postal-card reports of how bees are wintering, and we will publish a summary in our next issue.

Later.—Weather has moderated all over the country. It is to be hoped that we may have good weather from now on.

A Strain of Caucasians that do Not Run to Swarming

MR. HERMAN RAUCHFUSS, of Denver, Colorado, has a strain of Caucasian bees which he secured in the Caucasus ranges some years ago, and which, he says, are fine workers, very gentle, and do not run to swarming like those we had. He is not in

the queen business, but has been keeping this strain from year to year because they have been doing remarkably good work for him in honey production. They breed up early, and will go to the fields earlier and later than the ordinary Italian strains.

Back Home Again

E. R. ROOT has finished his western trip. Since being away he has covered over ten thousand miles, going from the eastern coast to the western coast, with stops here and there. It has been a whirlwind of a trip. Except for two or three days at the Dismal Swamp, Virginia, ten days at home, two days at Salem, Idaho, four or five in San Francisco, two days in San Diego, Cal., he has not slept twice in the same bed nor even eaten two meals at the same place. There are many of our friends whom he had to miss seeing, particularly in and about San Francisco, Los Angeles, and San Diego.

For a few weeks the editorial department will have something of a western flavor. Indeed, it began to take on that complexion in our issue for March 1.

"One of the Boys"

WE had a most delightful interview with P. C. Chadwick, in his California home. In this issue, page 309, he refers to his "boss," as he calls him, as "such a warm, open-hearted man! just one of the boys." We appreciate the compliment. To be one of the "boys" and nothing more is enough. Incidentally we might remark that Mr. Chadwick is another one of the "boys" whose home life is delightful. He has a family of which any man may be proud.

He is one of Uncle Sam's mail-carriers; but he is operating two outyards of bees, and one of the prettiest gardens that one can find in the United States. A. I. Root, if he could see that garden, would be one of the "boys" for a little while, sure. He would say "My stars!" at every turn. We

congratulate ourselves more than ever that we have an all-round man like our correspondent to represent GLEANINGS on the Coast. He knows the horticultural as well as the apicultural proposition.

Denatured Sugar

At one of the last sessions of the National Beekeepers' Association, Dr. Jager, the man in charge of the agricultural school at Minneapolis, suggested the matter of using denatured sugar. In Australia, for example, the beekeepers petitioned the general government to remove the duty from sugar fed to bees; but in order to prevent such sugar from being used by the public generally, a scheme was employed to "denaturize" the sugar, or, rather, to color it so it could not be used for domestic purposes. An infinitesimal amount of coloring matter which could in no wise be injurious to bees colors the sugar just enough so it can be used only for bees. In this way it is made available to the beekeepers at reduced prices without the duty.

Dr. Jager suggested that the National Beekeepers' Association pass a resolution asking the general government to make some provision by which the beekeepers of America could use a similar denatured sugar. The question was debated for some time, when it was finally decided to hold the matter for future consideration.

Educating the British Columbians

WHAT is a skilled beekeeper? F. Dundas Todd, foul-brood inspector for British Columbia, says the difference between skilled and unskilled is that the former secures a crop three times as great as the latter. In his circular on honey production in British Columbia for the season of 1913-14, he shows that there are also about three times as many unskilled beekeepers as skilled, as we might expect. The average crop per colony reported by the skilled class was 84 pounds in 1914. Were all the amateurs shortly to become as experienced as the skilled beekeepers the local market would be swamped unless the honey were disposed of elsewhere.

The people of the province are rather poor consumers of honey, so there is plenty of room for development of the market. The buying public must be tempted by attractive packages and attractive advertising. British Columbia has all the qualities one could desire in honey. The main thing is to prove this.

The Three-cornered Alfalfa Hopper

THE importance of alfalfa as a honey-plant makes of interest to beekeepers any information regarding its pests. Perhaps the most difficult of these to eradicate, as well as one of the most active, is the "three-cornered alfalfa hopper" (*Membracis festina*), the subject of a recent monograph by V. L. Wildermuth, published in the Jan. 15th number of the *Journal of Agricultural Research*, Washington.

Alfalfa is not its only food. The insects have been found on a great variety of plants, particularly on clovers. Of alfalfa, however, it seems to be particularly fond. Injury is due to the sucking of plant juices by both adults and larvæ, and the development of a feeding ring or scar. The insect leaves the plant in a wilted and often dying condition.

While no method has yet been discovered which will entirely control the pest, its numbers may be greatly reduced by clean methods of farming, such as the eradication of weeds, rubbish, etc.

While the alfalfa hopper is found in greatest abundance in the southwestern and southern part of the United States, it extends its range in limited numbers as far west as Montana and as far north as Ottawa, Canada.

Adulterated Beeswax

THOSE who are buying beeswax in any quantity are cautioned to look out for adulterated beeswax offered by dealers at a cent or two below general market price. It has been found that some of these cheaper waxes contain from 5 to 10 per cent of paraffin or ceresin. Those who have put out this adulterated product have probably been laboring under the assumption that wax containing so small a percentage of adulteration would not be suspected, and therefore not put to the chemical test. Ordinarily the "crack" test to an experienced eye will show as low as five or ten per cent, providing, however, that such an experienced eye is on the lookout for these low percentages of adulteration.

Again, it has been generally supposed that ordinary beeswax in cakes of all sizes and colors is probably pure, the presumption being that such wax is gathered up from numerous beekeepers, who, of course, use all kinds of utensils to *cake* the product; but some of the adulterators have learned this trick, and have been buying up old pots and kettles, even going so far as to dent or jam some of these pans slightly out of shape.

Grasshopper Enemies of Alfalfa

WHAT insects attack alfalfa are of concern to the producers of alfalfa honey, in some indirect measure at least, since prosperity depends upon their control. Two or three common species of grasshopper, their habits, and the methods of preventing or destroying them, form the subject matter of Farmers' Bulletin No. 637, "The Grasshopper Problem and Alfalfa Culture." This new circular will be of interest wherever alfalfa is threatened by an attack of these insects.

One of the enemies is known as the differential grasshopper, another as the two-striped grasshopper, and the third *Melanoplus atlantis*. Others have been reported to have had a part in the damage, but these are the principal culprits. Since the eggs are laid just below the surface of the ground, the most effective means of preventing their hatching is to plow or dig the soil to the depth of two inches. Full-grown insects may be destroyed by the use of a hopperdozer, a simple coal-oil pan dragged over the ground, or by means of poisonous bait.

Unless steps are taken to eradicate this pest, it is possible it may assume serious proportions.

Not Winter Nest but Aster Stores Responsible for the Loss

OUR friend and correspondent Mr. J. L. Byer, of Canada, in our issue for April 1, in his department, says: "It is not often that the editor gives me such an opening as that on page 176, March 1, when he tells of so many colonies being dead." Then he goes on to give it as his opinion that the death-loss was due to "too much winter nest." Perhaps we should have explained on page 176, which we did not do at the time, that the bees referred to consisted of ten colonies in double-walled packed hives by themselves in the Blakeslee yard, and an equal number at the Harrington yard. These colonies had come from the swamps near Akron, and were supplied almost entirely with aster stores. As a matter of fact, they did not have a winter nest, but had solid stores of aster, or practically aster honey, and, furthermore, they were not very strong to begin with, but were no weaker than those in Holtermann quadruple winter cases. While there was a 30 per cent loss; there was only one dead out of sixty in the Holtermann winter packing-cases *having the same stores and about the same strength per colony*.

We did not then realize the fact that aster stores were going to prove so troublesome; but later events showed this very clearly. The incident, so far from showing that the winter nest is a bad thing, proves nothing on that point, but, rather, goes to show that the death-loss was due to the quality of stores and an insufficient packing *for the kind of stores*. It also showed that combs of solid stores did not save them.

Prof. Gillette on the Trouble in Western Colorado

WE had an interview with Professor C. P. Gillette, Entomologist at the Experimental Station, Fort Collins, Colorado. We referred to the fact that statements had been made that large numbers of beekeepers had lost heavily on account of the spraying liquids falling on the cover crops under the fruit-trees on the western slope of Colorado. He admitted that this was probably true, and was urging the fruit-growers to plow these crops under, or to cut them before they go into bloom. No trouble, he said, arises from the sprays that fall on the fruit-trees, because the fruit-growers for their own protection, and because there is a law against it, do not spray while the trees are in bloom; but red clover, which is chiefly used as a cover crop, comes into bloom when there is a general dearth of honey, and at the very time when the trees are being sprayed with arsenate-of-lead solutions.

Prof. C. P. Gillette is a friend of both the fruit-grower and the beekeeper, and we may rest assured that he will do every thing that lies in his power to prevent the further destruction of bees.

Making All the Clover Seed Germinate

ONE of the discouraging things in clover-raising has been the low germination of the seed, due to the hardness of the seed coat. Only a small proportion of the seed of the common clovers can be expected to produce plants. Now the Iowa Experiment Station announces that it has constructed a practical machine by which it is possible to scarify the seed coats and thereby increase the germination of legume seeds to over 90 per cent.

The first machine with this efficiency was constructed in December, 1913. No announcement was made at that time, however, in order to allow time for field tests comparing treated and untreated seed, in

addition to extensive germination tests. A large number of plots were seeded on the station field in the summer of 1914, comparing treated and untreated sweet-clover seed from various sources. In a large number of cases, stands which were, if any thing, too thick, were secured from the treated seed, when the same seed seeded at the same rate and time, but not treated, failed to produce any stand at all. The machine as constructed has a capacity of approximately 25 bushels per hour, and requires about four-horse power to operate it. It is estimated that it can be put on the market at a price not to exceed \$90 to \$100.

The construction of the machine represents eight years' work on the part of H. D. Hughes, Chief in Farm Crops.

During the spring of 1914 and 1915 several thousands pounds of sweet-clover seed were treated for individual farmers. A farmer for whom the section treated some 3000 pounds of seed in the spring of 1914 states that the seed germinated approximately 50 per cent when sent to Ames, but germinated 98 per cent when returned. Another reports using 5 pounds per acre of treated seed, from which he secured a perfect stand, while the usual rate of seeding ranges from 15 to 20 pounds per acre with many failures and uncertain stands resulting from poor germination.

While it is too early to predict the indirect effects of this invention on beekeeping, it may ultimately be of great value. Any thing that will increase the number of honey-plants in an acre of ground will make it more easy for the bees to gather nectar, especially in lean years. An invention that will treble the effectiveness of all the clover seed is likely to mean much to those who depend so directly upon the clovers as the beekeepers do.

Dr. A. J. Cook, Horticultural Commissioner of California

IN our last issue we referred to our interview with Dr. Cook. We had the pleasure of meeting him for an hour between trains, and he is the same old Professor Cook whom we used to know away back in Lansing, Michigan. He was always an original investigator and a lover of bees, and interested in all lines of horticultural work. As Entomologist at the Michigan Agricultural College, back in the early days, he did some invaluable research work. Among other things, he was among the very first, if not the very first, to make some direct experiments in testing out the value of bees as

pollenizers of fruit-trees. He covered the limbs of certain trees with mosquito-netting before they came into bloom. The result of all this work showed how necessary was the work of the bees. Similar experiments were made by others at a later time with the same results.

Dr. Cook was probably the first to suggest the use of oil emulsions for the destruction of the San Jose scale. About the same time Dr. Riley, then Chief of the Bureau of Entomology, Washington, D. C., was conducting similar experiments and claimed the honor of the discovery; but Cook, we think, from the evidence in hand, was a little in the lead.

Cook was also the first to show that honey is a predigested sweet, or, as he called it at the time, "digested nectar." He was ridiculed by many at the time, even by prominent beekeepers, for putting out such a "heresy;" but now the whole scientific world acknowledges that honey, before it comes to the human stomach, has already gone through one stage of digestion.

Dr. Cook, notwithstanding he is well advanced in years, seems to be in the very prime of his youthfulness. His aggressive pioneer work has sometimes made him enemies; but all he asks is that his work be thoroughly investigated. At times the attacks that have been made on him have been particularly bitter. False charges have been hurled at him; but to-day he stands vindicated as one of the strong men in his state.

The Editor of Gleanings Interviews the Editor of the Western Honey Bee

WE had the pleasure of visiting Mr. J. D. Bixby, the genial editor of the *Western Honey Bee*, at his home in Covina, near Los Angeles, Cal. He is one of that kind of men who wear a smile that never comes off. In fact, we had a most delightful talk with him concerning problems connected with the beekeeping industry in the East as well as in the West. In this connection it should be noticed that Mr. Bixby originally hailed from New York, where he had a considerable experience as a beekeeper. He has continued his bee operations in the West for several years back so that in a sense he unites the East and the West. He is eminently well qualified to take up the editorial management of a bee-journal; and, so far as we could learn, that paper is making good on the Coast.

Mr. Bixby is one of that kind of bee editors who are almost every day among

their bees. When we met him he had on his overalls, for he had just come from his shop where he was preparing some supers.

Mr. Hutchinson, the greatest bee editor this country has ever had, once remarked to us that the man, other things being equal, who wrote an article on a hive-cover with a pencil daubed with bee-glue usually wrote something that smacked of experience. Mr. Bixby is evidently one who draws inspiration direct from his bees; if so, all the better for the *Western Honey Bee*.

In speaking of the orange country for beekeeping, Mr. Bixby made this significant remark: The citrus region makes a good *bee* country, but not an extra-good *honey* country. In other words, the orange-groves will furnish honey fast enough to build up colonies amazingly, and one can raise bees very easily; but it is not so easy to get the honey. The only way to accomplish this is to make all colonies strong. The brood of all the weak colonies is given to the fair ones, so there will be nothing in the yard except strong ones. With these one can get a crop of orange honey if the season is any way fair. Where orange is followed by sage or some other stores, one has a good honey country. But it is not often that one can have this combination.

Government Honey Cook-book

VARIOUS ways in which the housewife can use honey to advantage are suggested in a new publication of the United States Department of Agriculture, Farmers' Bulletin No. 653, "Honey and its Uses in the Home." This bulletin is now ready for distribution, and can be secured free of charge by dropping a line to the Department.

Every beekeeper or any one else interested in the use or sale of honey should secure a copy of this bulletin at once. It is crammed with suggestions for the broader use of honey as a substitute for high-priced sugar, and with recipes for delicious cakes, cookies, and other dainties. Many of the recipes have already been published in this and other magazines, and the suggestions have been gathered from many sources, but at the same time the Department has been making experiments which showed that many of the old recipes are unnecessarily elaborate.

Any suspicion that the public may have regarding the adulteration of honey is dealt a hard blow by the statements, "There is now, it is believed, little adulterated extracted honey on the market," and "Comb honey is practically certain to be the pure

product of the hive, because it can be adulterated only by processes which cost more than they save."

Wholesale attention was called to this bulletin, and much of the valuable matter in it was brought out, by a press notice of the Department, which was sent to every newspaper in the United States for release April 14.

The Old-time Prejudice of the Fruit-growers against Bees Practically all Gone

EVERYWHERE we go throughout this great West we find that the old-time prejudice against the bees, on the part of the fruit-growers, has practically disappeared. It exists in a few sections among the ignorant and those who would naturally be prejudiced against any industry except their own. All up through the great orchard districts of Oregon, bees are coming more and more into demand. We find the same thing in California, especially in Santa Clara County. The growers of prunes and apricots are especially friendly toward the bees, and are inviting the beemen to put bees in their orchards everywhere.

There was one little section in Oregon where some of the apple-growers were foolish enough to set out syrup poisoned with arsenate of lead to kill bees. They succeeded all right, and destroyed large numbers of them, practically ruining all beeyards of the vicinity; but that foolish prejudice has practically disappeared, and, so far as we know, there is no more poisoning of bees.

There are other localities where bees are not thought to be essential to proper fruitage. The following is a case in point:

An Apple-orchard of 15,000 Acres in the Pejario Valley, Cal., where the Trees are Sprayed while in Bloom; Some Astonishing Revelations

IN connection with Prof. C. W. Woodworth, of the University of California, situated at Berkeley, we visited one of the most famous and perhaps the most extensive apple-growing region in the world. In a little area in the Pejario Valley, with Watsonville as a center, there are shipped out annually 4000 carloads of apples. The whole area comprises something like 15,000 acres, nearly every foot of which is devoted to the growing of apples. The only varieties grown are the Newtown and the Bell-flower. Other fruits, such as strawberries

and Logan berries, are grown in that valley that will aggregate nearly 4000 carloads more. Just think of it—8000 carloads of fruit from a triangular region about ten miles across!

But what has all of this to do with bee-keeping? At first we heard that there were no bees there. If that were so it would have a tendency to contradict some of our theories concerning apple-growing; but investigation showed that there were some bees in the valley, just the same, although the number was comparatively small; and the strange thing is the fruit-growers in that valley, supported by the county horticulturist, do not care to encourage the introduction of bees. Another remarkable fact is, that the *trees are sprayed while in bloom*; and the horticultural commissioner, Mr. W. H. Volek, supported by Prof. Woodworth, says that *such spraying does not kill the bees*, and they do not believe that the spraying of cover crops in Colorado would do it either.

Right here locality has a wonderful bearing on the relation of bees to apple-growing. Both varieties of the apples mentioned are self-fertilizing in that valley—that is to say, they do not need the agency of bees to mingle the pollen. At least in that particular valley it would appear that bees are not an important factor in the production of these two varieties.

One more factor is the long period of bloom during which the bees are able to work. A comparatively small number of bees in weather like that of the valley can do the work of many bees in localities where cold and damp weather allows them to work on the blossoms for only a few hours.

But how do they know that spraying while in bloom does not kill the few bees that are there? Professor Woodworth placed a colony of bees right in the midst of the orchards during the time when the trees were in full bloom, and while they were being sprayed. Instead of using arsenate of lead the apple-growers use arsenite of zinc—a much stronger poison; and even this, say Professor Woodworth and Commissioner Volek, had no effect whatever on that colony of bees. They *prospered during the entire spraying season, and stored honey*. After the spraying season was over, the colony was sent to the University at Berkeley, and both the honey and the bees themselves were very carefully examined for traces of arsenic; but none could be found except on the outside of the bees. It seems that the bees were literally doused with the poison while they were flying; but, apparently, they got none of it in their intestines.*

Commissioner Volek was kind enough to take us in his machine over different parts of the valley. We drove something like thirty or forty miles that day. We found bees in several places, but hardly enough to pollinate such an enormous number of trees provided the varieties were sterile to their own pollen, as occurs in most cases and in most localities. In this connection it appears that locality has a strong bearing on the question of whether bees are needed to pollinate the blossoms. The Newtowns and the Bellflowers are the only varieties that do well there, and both are apparently self-fertile in that wonderful clime.

We remarked that if more bees were put in the valley there would be more fruit; but Commissioner Volek immediately replied, "The fruit is too thick there already as it is. It has to be thinned out on the trees."

"But," we remarked, "if there were bees there in sufficient numbers, would not the fruit be larger?"

"It could not be very much better," he said, and pointed to some specimens on the hotel table where we were then eating.

Professor Woodworth is Entomologist of the University of California at Berkeley, and a great friend of the bees. While he freely acknowledges they are necessary for the proper fruitage in many localities, he says it is clear that their presence in that valley is not essential.

He says, however, that there were more bees there on this tour of inspection than he supposed; and he thought it was possibly true that they did some work in those orchards. But one thing he says is quite certain; and that is, that spraying while in bloom did not hurt the bees nor the fruit. He had his serious doubts as to whether the arsenate of lead that fell on the cover crops in Colorado was the real cause of the death of so many bees. We told him that Prof. C. P. Gillette, of the Colorado Experiment Station, was very much of the opinion that it does kill the bees. That might be possible, but he did not see how locality could make all the difference. Dr. A. J. Cook, Horticultural Commissioner of California, on the other hand, said he was very sure that ordinary arsenate-of-lead sprays could and do kill bees under most conditions, and reports generally seem to confirm this.

* Prof. Woodworth, in an article in GLEANINGS, page 987, Dec. 15, 1914, described the observations and the conclusions he had reached on this matter. Subsequent criticism has been to the effect that experiments with arsenite of zinc would give no result for arsenate of lead, since the former might repel the bees. It was also brought out that one colony one season was not a fair basis for conclusion.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



I WONDER if the light outdoors is not better for bees in winter than the darkness of the cellar.

Now isn't it funny,
With so little money,
The eating of honey
Makes tempers so sunny?

A CAMPAIGN is getting under way to make Chicago dry in 1916. Are they crazy, or is the millennium at hand?

How good it seemed to see the old-time leaders, L. C. Root, P. H. Elwood, and W. P. Henderson, again in print in *GLEANINGS*, April 1!

ARE you planning to keep tally of every pound or every section you take from each colony this year? If so, then you'll know what stock to breed from next year.

YOU say, Mr. Editor, p. 219, that I can not pack my hive-cover. Why can't I pack that dead-air space? To be sure, it's only $\frac{3}{8}$ inch, but it could be made more. Yet the double telescope may be warmer.

M. A. GILL says, *Western Honey Bee*, 7, that he marked his No. 1 sections "not less than" 12 ounces, and his No. 2 "not less than" 10 ounces. That was considerably less than their weight, but he could sell his honey by the case just the same as before the new law, without running the risk of free board at Fort Leavenworth.

JOHN S. SNEARLY, I use thin super foundation in sections, top starters $3\frac{1}{4}$ inches deep, bottom-starters $\frac{5}{8}$. I don't use extra-thin because the bees are so much worse at gnawing it down if at any time there is a lull in the flow; and even if I should use extra thin above I should want heavier for bottom starters so they wouldn't topple over.

G. M. DOOLITTLE's last way of preventing after-swarms—listening for piping—is excellent, p. 266. For those who might prefer one of his previous plans, let me suggest a slight variation. Leave the old hive standing close beside the swarm for a week. Then, at 2 o'clock, carry the old hive to a new stand. That's less trouble, and just as sure to work as the gradual turning.

USUALLY I go by the blooming of the soft maple in taking bees out of cellar, but sometimes it is not reliable. A little almanac must be mixed with it. This year a few blossoms were out on one tree—and only one—the 25th of March, and the thermometer was up to 55 degrees. If it had not been for the almanac the bees would have

come out. But at once it turned cold—15 to 20 degrees each morning—and it was good to know that bees were in the cellar.

THE question is asked by P. C. Chadwick, p. 264, why is it that in one case bees recover from a three-days' freeze, and in another case succumb in a much shorter time? As a sort of forlorn hope let me suggest that the deciding factor may be the thawing. Take frozen fruit or vegetables. Plunge part of them in a pail of water nearly freezing, and let the rest thaw in warm air. Let the first thaw out slowly, and they will be as good as new, while the latter will be spoiled. Why not the same with bees?

A LONG time I looked with much interest at that picture of the Quinby home, p. 269. One summer in the '60's a business trip took me through St. Johnsville, and I called on Mr. Quinby. He insisted on my spending the night, and I shall never forget his kindly treatment of the budding young beekeeper. His apiary was somewhat picturesque, his hives innocent of paint. In that economy I have imitated him. The first hives I ever had—I made them myself—were Quinby box hives. His instructions in *The American Agriculturist*, continued monthly for years, were always excellent. His book was a revelation.

THE *Country Gentleman* is doing good service in championing sweet clover as a farm plant, but is behind the times on spraying. Its latest number contains an article advising to spray fruit-trees when two-thirds of the blossoms have fallen. [Of late, experiment stations and other authorities on the spraying of fruit-trees seem to be inclining toward condoning, if not actually suggesting, spraying while the petals are falling. At that time the secretion of nectar is ended, the pollen dried up, and few bees are working on the blossoms. Prof. Chenoweth of the Massachusetts Agricultural College says that bees no longer visit the blossoms when the petals are falling. At the Massachusetts Fruitgrowers' Convention last winter, the statement was made, "The blossoms of the trees fall at different times and one cannot be hanging around with the spraying apparatus watching for the proper moment for each tree." To this Prof. Chenoweth replied, "You would have to take the time when the maximum number of trees are shedding their petals and do it then. You would probably kill a few bees, but not enough to do serious damage."—Ed.]

J. E. Crane

SIFTINGS

Middlebury, Vt.



Wesley Foster's experience in selling light-weight sections is given on page 9, Jan. 1, is helpful, and can be used to good advantage in a home market.

E. S. Miles, page 70, Jan. 15, has serious trouble with large black ants. Suppose, instead of trying to subdue with kerosene, he tries making a hole six inches deep in the top of one of their mounds, and pour in three or four ounces of carbon bisulphide and cover closely. It evaporates quickly, and its fumes are a deadly poison.

On page 2, Jan. 1, we are informed that the bee-cellars at Medina are inspected daily to determine the temperature of the air; the condition of the bees, and the purity of the atmosphere. Will the editor please tell us how he measures the purity of the atmosphere? [So far, only by our noses and by noting the actions of the bees. —Ed.]

There has been a good deal of discussion in recent numbers of GLEANINGS as to the desirability of making two colonies from one early in the season, after Alexander's plan for securing surplus honey. I notice that those (or most of them) who favor this way have a flow of honey in August, while those who do not favor this method depend almost wholly on clover.

With me, bees that were placed in cellar in November have wintered well, although the temperature has been most of the time above 45 degrees. The winter has been fine for wintering outdoors, but I anticipate some loss because an unusual number of colonies were quite weak last fall. We have had but little severe weather, with an occasional day when bees could fly to their hearts' content.

I think I have read somewhere that A. I. Root and Dr. Miller were trying to live to be one hundred years old. Well, there are possibilities. For their encouragement I just want to say that a man recently died in our town in his 106th year. He was a Methodist clergyman who had retired after preaching for sixty or seventy years, although he continued to perform marriage ceremonies until past 100. He celebrated his 100th birthday by preaching a sermon in one of our local churches.

With regard to the use of tartaric acid, as I said before, I find little use for it when a syrup made of two parts sugar and one of water is used, and I have fed a good deal of such syrup after the middle of October. The only objection to a thicker syrup is that, if it gets cold, as it is likely to on colonies a little weak, the bees are very slow about taking it down late in the season.

In an editorial, page 176, March 1, I read, "There is a certain advantage in having a colony during winter in a nice compact cluster. In that condition there is less activity, less consumption of stores, and no brood-rearing." No brood-rearing! Isn't that putting it pretty strong? Here in Vermont the most of our colonies in double-walled hives appear to be in that condition during the winter; but I do not remember ever opening a strong colony after the middle of February that did not contain more or less brood.

On page 56, Jan. 15, R. F. Holtermann asks if the fence around a yard of bees to which I referred some time ago is eight feet high. I could not say. It was many years ago that I saw it, and I think the fence was not more than six or seven feet high. What is more, I believe the hives were single-thickness board hives, which might make all the difference in the world. With ten inches of packing, such as they are using at Medina, I should not think the bees would get warmed up enough to fly until it was safe for them to do so. Indeed, if they could tell when it is spring I think they would do very well.

It almost took my breath away to read the editorial, page 48, Jan. 15, about sweet clover in the three counties of Kentucky. Wouldn't that be great—white clover through the month of June, and then sweet clover till late autumn? That must be the paradise of beekeepers. But when I read further on that there are already 4000 colonies in one county I began to feel as a lady did who wanted to go into the hotel business. She said she thought she would wait till everybody died so she would have no competition. Perhaps a given number of colonies will do no better there than here. But at any rate it shows us beekeepers how we ought to stimulate the growth of sweet clover where we are.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



Bees in the city are beginning to swarm. This is about as early as I have ever known swarming to begin to any extent.

The first orange-blossoms of the season opened in this locality about March 25. The main blooming period will not be on for two weeks.

When I looked at the picture of foul-brood combs on page 235, March 15, I felt like grabbing them up to put them out of the reach of bees.

Filaree does not seem to be yielding its usual quantity of nectar this season. The quantity of pollen from it is becoming a nuisance in the combs.

A writer in the *Western Honey Bee* says Nevada honey sells from one to three cents higher than California honey. On that point I am from Missouri.

I have one colony with brood in three supers, seventeen frames in all, and still spreading. I would try the much-discussed spring dividing on them if it were not that the orange is already beginning to bloom.

The "boss" slipped in on me last week. Gee! but I felt nervous. After he had gone I felt foolish over my fright, for I now have his personal permission to call him plain Ernest Root. Such a warm, open-hearted man! just one of the boys.

In a private discussion while at the state convention, on the question of whether or not bees hear, I voiced the opinion that they do hear. Since that time I have studied the question a little deeper, and have come to the conclusion that I was foolish indeed to entertain even a thought that they might not hear. Really their actions in the air, while swarming, and at nearly all times, are controlled by the different sounds of their wings, which is talk to them.

While passing the hospital on March 23 I saw a large swarm of bees entering that institution. There was no ambulance in sight nor doctors in attendance. So far as I know they were not diseased, nor really in need of medical attention. Perhaps they

are to assist the rheumatic patients. As they entered near the busiest part of the building it will be almost safe to say they will operate on some one before long.

On March 13 I found a two-story colony trying to raise brood in an upper super that was nearly full of honey. To relieve them I reversed the supers temporarily. The result was five combs full of eggs and larvæ on the 23d, in addition to what they had on the 13th.

In the *Western Honey Bee* for March, Editor Bixby gives C. I. Graham a beautiful coat of whitewash, and closes an editorial by saying that all Mr. Graham asks for is a square deal. That is fair, perfectly fair; but Mr. Bixby would have a hard time in convincing a large number of beekeepers other than that, if Mr. Graham had had a square deal, he would not have shipped half the bees that he has been given credit for having shipped.

The school exhibit of the tri-counties fair as pictured on page 238, March 15, is interesting to me. We watch the little folks grow and develop, and wonder what their "bent" will be. They are a great study, and should be given some latitude of action so that they may choose a line of work for their future which they like, and are in turn of mind adapted for. One of the chief problems with boys of this day seems to be to steer them clear of the cigarette habit. With the girls it is to impress them with some sense of modesty.

Prospects are indeed bright, but we should not be too sanguine, for just such fine prospects have turned into disastrous seasons within a short time. A few days of hot dry desert winds and a dry spring will change the situation entirely. The best time to measure the honey crop is when it is ready to market. The ground is wet deeper now than at any time last year; and with sufficient surface moisture during the spring, with no desert winds, we should get some honey. The sage is a problem to me this year. It looks well—in fact, as well as I have ever seen it; but since it yielded well last year, and we have never to my knowledge had two successive good yields from the sage, it makes me feel a bit doubtful as to the outcome.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.



That cover picture of Ira D. Bartlett's apiary, in the Feb. 1st issue, appeals to me from the fact that it shows the hives arranged in pairs. I have raised my objections at various times to the too common practice of placing them in long rows with a single hive to a location, and all the same distance apart. My experience seems to prove beyond a doubt that the loss of queens returning from their mating-trip is far greater because of the fact that the queens are less able to locate their own hives when they are all alike. This is obviated to a great extent by setting them in pairs, even when they are in long rows. I prefer to have them in groups of fives, partly in the shade of a tree or where there are several trees close together, facing three hives to the southeast, one to the southwest, and another on the opposite side facing to the northeast. Enough room is left between the backs of the hives and the tree or trees to allow free operation with the hives from the rear, and out of the flight of the bees. I call attention to this matter at this time so that others may try it when setting out their bees this spring in the North, or for those who may wish to rearrange their apiaries in the South. I have had several enquiries on this subject lately.

"BUY MORE COTTON" OR "BUY MORE HONEY"?

When the cotton farmer was so "hard hit" by the outbreak of the European war every effort was made to relieve the strenuous situation that affected almost every industry and every vocation to some extent. One of these movements was the "Buy a Bale of Cotton" idea, and many bales were taken care of in this way.

The writer soon learned, not only from his own experience as an extensive producer, but from many other sources, that the beekeeper is suffering from the effects of the war upon the honey markets, especially in the South. It was soon realized that the beekeeper, as a producer, was affected very much as was the cotton producer; and if the "Buy a Bale of Cotton" movement was doing the latter some good, why should not a "Buy a Pail of Honey" movement aid the beekeepers?

It is not too late for a campaign of this kind even now. There is much unsold honey, and the end of the war is not yet; so that I feel the conditions will not meet with

a material change for the better for some time. Especially true would this be if we experience another large crop this year, for which the prospects in Texas, at least, are most excellent.

THOSE COVER PICTURES.

Speaking of the cover pictures as they have appeared on the front cover of GLEANINGS for some time, I agree fully with Prof. Newell, p. 134, Feb. 15, in hoping that this type of cover may not soon be discontinued. These not only help to make GLEANINGS look more beautiful, but the pictures the editors have used have been interesting and of an instructive character in one manner or another.

With special reference to the illustration of the experimental apiary near College Station, Texas, by Prof. Newell, I feel that Prof. Newell would not have the readers, and especially beginners, infer that he would have them adopt in their own apiaries either the arrangement of the hives, the methods of keeping records, and one or two other features shown in this picture. I have already raised objections to setting hives singly and systematically in rows or in hexagonal order. This experimental apiary is arranged in this manner.

Although the manner of keeping records of the hives as shown is excellent for experimental purposes, it would be rather impractical to employ on a large scale or for many hundreds of colonies. While the white-painted and numbered-stake plan is a good one in some respects, the stakes are rather expensive in the first place; and in keeping up the numbering properly on account of the comparatively rapid decay of stakes driven in the earth I should prefer to keep the number of the location on the hive-body itself, and for this purpose I have a hive number that surpasses any that has been brought to my notice so far. This has been shown in GLEANINGS, but it seems to me it was not fully understood. It is very simple, made of galvanized iron, is very cheap, easily made, and hangs over the hive rabbit, and is held firmly in place by the supers or cover set on it. It is easily shifted from one hive to another when there is occasion to take the hives to another location. These are more satisfactory than the stakes, and are not in the way of the operation.

The manner of indicating certain conditions of the colonies by means of bricks on

top of the hive-covers is an old plan that I once employed myself while carrying on experimental work at College Station, and I had hanging in the honey-house a chart showing the meaning of the different positions of these bricks on the hives. The first cost of the bricks is rather expensive, however, and it is a lot of trouble to lift off and replace the great number of heavy bricks every time a hive is to be examined. Of course, the argument may be advanced that these bricks serve the additional purpose of holding down the covers against being blown off by strong winds; but I have preferred the use of slightly heavier covers, or such that are so constructed that they can not be blown off easily, and that can be lifted off with one operation. I still adhere to the manner of indicating the condition of the colonies on the hive-covers, but use small stones or pebbles that can always be picked up in almost every apiary. These cost nothing, and serve the purpose just as well.

* * *

THE EMERGENCY AND GENERAL TEXAS FOUL-BROOD APPROPRIATIONS.

Governor Ferguson has just signed today, March 18, the emergency foul-brood-appropriation bill of \$3000. This is purely an emergency appropriation for this year, and to precede the general appropriation requested by the Texas Experiment Station in the budget for the next two fiscal years beginning Sept. 1.

No appropriation was made by the Thirty-third Legislature for this purpose, owing to the fact that this was by some mysterious manner left out of the appropriation budget altogether during its passage through the legislature. Owing to the fact that the general appropriation would not become available until after Sept. 1, this emergency appropriation will permit the work to be taken up again immediately where it was left off over a year ago.

The amount asked for in the budget of the experiment station is \$10,000 for each of the two fiscal years, 1914-'15 and 1915-'16. This is a larger appropriation than has ever been asked for such purpose, or that has been made by any other state. It is intended to use a larger amount of money at one time with the determination to eradicate the disease from the state rather than to carry on the inspection work in the usual and more or less inefficient manner year after year with smaller appropriations. It is believed that this will prove by far the better plan, and cost less eventually. With the disease once wiped out, proper quarantine regulations established and enforced,

and then followed up with smaller appropriations more easily obtained thereafter, seems to be a superior policy with which to cope with the monstrous task of dealing with foul brood.

Although the members of the present legislature have begun to understand the great importance of the beekeeping industry, and the great need of ample appropriations of money with which to combat foul brood and other bee diseases, it is impossible at this time to say whether they will grant as large an appropriation as is sought for this purpose in the experiment-station budget. If they only knew the gravity of this question, and the effect the presence of this disease has in retarding the beekeeping industry, there would be little hesitation. Most of the members know little or nothing about this matter. They are not beekeepers; and even many who have bees of their own, or those who have neighbors who may be even extensively engaged in this pursuit, do not know the seriousness of the situation as we do. It behooves us, therefore, as I have said in this department before, to call their attention to it. The appropriation bills will come up in the special session, which convenes April 29, and there will be plenty of time for Texas readers to write to their representatives and senators after they get this journal, and before the legislature meets again. Even if one has already written them, it will be well to call their attention to it again for the special session.

In conclusion I feel grateful indeed to the members of the Thirty-fourth Legislature for already so willingly granting the emergency appropriation that is now available, and I hope they will give further due consideration to the regular appropriation.

* * *

BEEKEEPERS AND LAW-MAKERS.

The Texas legislature has at least one beekeeper among the membership this year. "Beekeeping" is given as the occupation of this member, and I know that this is the sole occupation because I happen to be that member. It has always been my utmost endeavor to place beekeeping on a higher plane, and much of my time has been devoted to efforts in this direction during the last fifteen years. Of course, to many it will occur as to whether "mixing beekeeping with politics" is lifting our beloved industry to higher planes. I would have it understood, however, that I do not desire to be classed with the "professional politicians." It is my desire to remain just a plain common-sense representative of the people who have chosen me to represent them.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



QUESTIONS ANSWERED.

Can you tell us how a queen makes the noise in piping? My neighbor beekeeper says that the noise is made with the wings, but I am somewhat in doubt.

I have watched virgin queens many times when they were in the act of piping, and never yet saw one standing up with wings "purring and fluttering," as I was told they did when I first began keeping bees. One day, when I heard a queen piping quite vehemently, I carefully lifted the frames till I came to the one she was on. In later years I found out that such careful lifting is not required; for when a queen is really in earnest she will go on with her noise, even when the frame she is on is handled quite roughly.

A piping queen does not stay long in one place, but is like the seventeen-year locust which sings her song on a limb of a tree and then goes to some bush or fence-post to sing the same song over again. So the young queen will run about among the bees for a little, when she will suddenly stop and crouch upon the comb till she apparently lies as flat as possible, when the head is slightly inclined upward, or off from the comb, and the piping sounds uttered. This seems to require considerable effort, as there is a tremor throughout the whole body.

From almost hours of watching I have never known any queen to pipe unless she stopped and thus arranged herself on the comb, nor have I ever heard a "pipe" from any queen while she was on any other place than a comb. I thought the comb was necessary, so that the feet might lay hold on the inside of the cells, but had to give that up, for they perform this operation on smoothly sealed honey, or on sealed brood with apparently the same effort as on unsealed cells. I never saw a queen pipe without a slight incline of the head upward, nor without an apparent stiffening of the whole system and a slight tremor of the body.

Just how the noise is made I was always at a loss to know. The noise sounds very much as if a tiny saw were wrestling with a tiny splinter, only the first noise is much longer drawn out than those which follow. Then the interval between the first and second notes is much longer than are those which follow in rapid succession up to five or six, according to how long the queen has been piping, and how enraged she becomes from the quahking of one or more queens in their cells which are being held as pris-

oners there, awaiting the issue of a second, third, or fourth swarm. I have no idea as to how the queens quahk in their cells; but certainly this cannot be done by any fluttering of the wings. Who can tell us more?

How can I tell whether a colony has a laying worker? I am told that such workers lay only in drone comb. Is this right?

Doubtless laying workers use drone-cells more largely than they do worker-cells, but they will use either, and more often prefer a queen-cell cup than any other kind of cell. Then laying workers generally place more than one egg in a cell, while a fertile queen rarely ever lays more than one egg in a cell, unless it is at a time of few bees in early spring with a sudden and generous supply of pollen. At such times a prolific queen will often lay two or more eggs in a cell. But no one who has carefully examined to know how a prolific queen places her eggs in the bottom of any cell, with each standing on end as if glued there, will be "caught napping" regarding the eggs of laying workers. They attach their eggs in all manner of ways to the sides and bottoms of the cells, and often put from three to ten in any queen-cell cup that may happen to be in the cluster of bees where such are laying. Then these eggs lie about in different angles to the base of the cells, so that even the inexperienced have a suspicion that something is wrong.

Are large colonies more liable to swarm than small ones? I am told that they are. But I read that large colonies are needed to get good results in surplus honey.

I think there may be a misunderstanding in this matter regarding large colonies. With a large hive, say one holding twelve Langstroth frames, or a hive containing 2500 to 3000 cubic inches, a colony in such a hive will not be as much inclined to swarm as will a colony in an eight-frame L. hive, or one holding 1800 to 2000 cubic inches. Now, in the usual way of speaking, any colony in the large hive will be called, four times out of five, a large colony, while the one in the small brood-chamber would be called a small colony; and under this rendering the small colony will be more likely to swarm than the large one. But with the same proportion of bees as to the number of cubic inches, I have never been able to see much difference as to the inclination toward swarming. Of course, with each hive proportionally filled with bees, the swarm issuing from the large hive would be large.

GENERAL CORRESPONDENCE

THE HIGH AVERAGE OF SUCCESS IN BEEKEEPING

BY CHALON FOWLS

Of the recent special numbers of *GLEANINGS* I have enjoyed none more than the one giving the experiences of old beekeepers; and I consider the article by Ira D. Bartlett one of the very best. In reading how he worked up the business from nothing to five hundred colonies one grows enthusiastic about the possibilities of beekeeping, and we suppose the confiding and optimistic imitators will expect to read at the close something like this: "Go thou and do likewise." But, alas! we read, "It is said ninety per cent fail in the business." O Ira! how could you? Now, "honest Injun," did you ever believe that rot? Well, I never did, and I am getting tired of hearing such loose statements referred to as though they were established facts, and I will undertake to show that in my locality, at least, such a characterization of failures in beekeeping is wide of the mark.

In the first place, what constitutes a beekeeper as the term is used in our journals? Manifestly, it does not mean a person who owns a dozen colonies or less. As well call every farmer who has a like number of hens a poultryman. There are many farmers who keep a few bees who have a hundred times more capital invested in their farm or stock, and also spend a hundred times as much labor on them. So I will leave those out of the calculation.

But in our own county (which I consider an average one for this part of the state) during the thirty-five years since I commenced, I can recall only twenty who have had forty or more colonies, and of these only two I would say did not succeed. And these failures I would attribute to the men and not the business. Of the others, five have been removed by death, three discontinued on account of old age, two sold out their bees to engage in other business, and eight are still engaged in beekeeping, and are making it pay. Of the latter, all but two have combined general farming or fruit-growing with beekeeping. It follows, of course, that their attention was divided between the occupations. Yet, although these were not true specialists, there is no question of their success. I cannot give figures to show just what profit these sixteen men made for the time and capital invested; but as I was personally acquainted with most of them I know they were

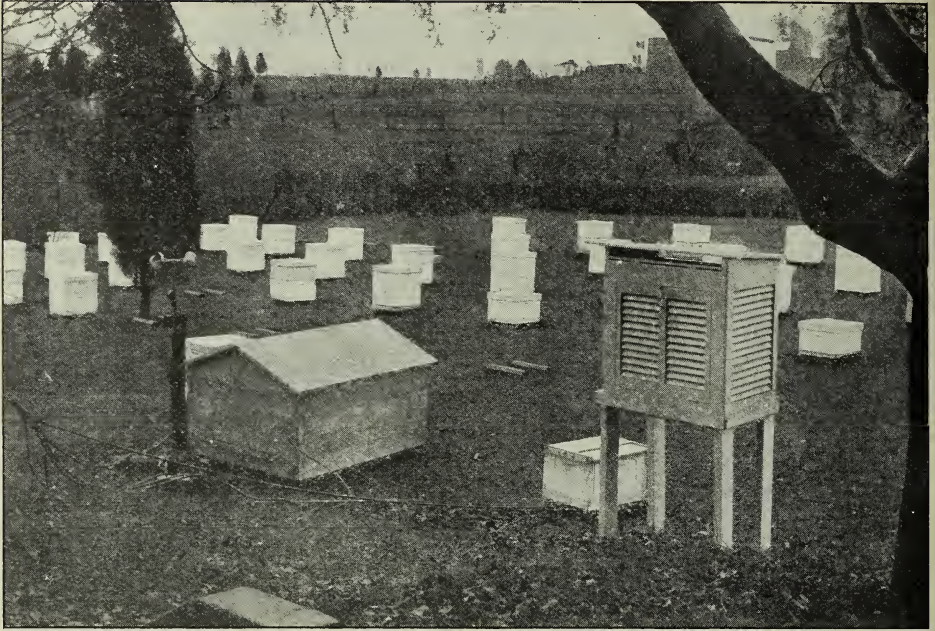
making it pay, as may be inferred from the fact that they still keep their apiaries, or did until old age or death intervened.

I do not claim that this list is complete, as there may be others living at some distance from me that I don't know of; but I have no reason to suppose that the addition of such beekeepers to my list would make the average very much different. Of course, just as in raising other food products there are some who make a better showing than others. But I believe a large majority are making more money for the time and capital invested than is made in most of the other lines of food production.

Looking to the future, I consider the outlook good, both for securing good crops and realizing good prices. Here in our locality in the past our crops have been principally white clover and basswood; but now, although basswood is nearly gone the loss is more than offset by the increase in alsike clover, which so far has never failed to furnish a crop of honey.

But it will be argued, if people are encouraged to engage in the business will not there be an overproduction that will ruin the market so that a person cannot be sure of making a living at the business? I answer, no. The consumption of honey is increasing much faster than the population, and I think a very large part of our future market is yet undeveloped. We have a lot to learn yet in the way of advertising. As a pointer to show an awakening of interest in our product I will mention that I have just received an invitation from a large jobbing house to give an address on bees and honey before their traveling men. This was entirely unexpected and unsolicited. Of course I accepted. I told them I would be "delighted." This, of course, shows that the great jobbing houses are becoming interested. Then the local or home trade shows just as healthy growth. It is a fact that there is more honey sold at one store in my home town now than there was in the whole town (with perhaps a dozen stores) thirty years ago.

Some are in the habit of saying that honey at present prices is too much of a luxury to come into general use with the masses. But what about the breakfast foods? It strikes me that ten cents a pound is a pretty stiff price for wheat; yet the



Government apiary at Somerset, Md., showing the electric cables used in recording temperature, wind, velocity, etc.

masses are paying it, and why? Because they are coming to believe such preparations are healthful, and they will use honey for the same reason when it is properly brought before them. I understand there has been a large increase in the production of extracted honey of late years, yet I do not find it has resulted in lowering the price. Referring to the market reports in GLEANINGS, I find the Cincinnati market report for February, 1915, for clover extracted in cans, ten cents; February ten years ago, seven to eight cents; February twenty years ago, four to seven cents. Although this does not show all the fluctuations, it is a fact that the prices are better now than twenty years ago.

To show further my faith in the business I will say that my son, a young man of twenty-four, is giving up a good position in the city to engage in some outdoor employment, and, with my encouragement, he will take up beekeeping. Shall I tell him that ninety per cent of those who engage in this business fail? No! I would rather quote from an optimist like my old friend H. R. Boardman. In a private letter that I received from him during the past year I find these words—and I am sure he will not object if I quote them here: "If I were only a young man of twenty I would just be delighted to engage in beekeeping."

Oberlin, Ohio.

THE ELECTRIC CONNECTIONS IN THE GOVERNMENT APIARY, WASHINGTON, D. C.

BY E. R. ROOT

The accompanying illustration gives a view of the Government apiary in the suburbs of Washington, D. C., at Somerset, Md. The reader will notice sundry wire cables running to the quadruple packing-case containing four colonies, and to the two or three single-walled hives, each containing a colony. These cables are connect-

ed with electric thermometers from which readings are taken, taking the internal temperature of the colonies. The hives in the background comprise the regular Government apiary; but these are not connected with the electric apparatus for recording temperatures. Just a little to the left of the quadruple packing-case, and in line with

the evergreen, is a Government anemometer. Electric wires run from this to the building where records are taken of the velocity of wind, because this has a great deal to do with the wintering problem and with the internal temperature and external temperature, as well as with the temperature surrounding the cluster of a colony of bees.

The little latticed structure shown in the right foreground is what is called a "weather-bureau shelter." Its purpose is to pro-

tect weather-bureau instruments from sun and rain, and at the same time leave them subject to direct atmospheric changes. One of the instruments is a thermograph for recording temperatures, and the other a hygograph for recording humidity. These outside weather conditions are used for comparison with the internal cluster temperatures as taken through the cables to the hives and recorded inside the office.

THE ISLE-OF-WIGHT DISEASE; HOW IT MAY BE HELD IN CHECK

BY A. H. BOWEN

There are few English counties in which the dreaded Isle-of-Wight disease has not appeared and spread with unabated vigor, and fewer still are the hives it has left intact after its deadly course has been run. Moreover, it takes all the skill and energy of the large hive-owner to keep on keeping bees in spite of it. It seems useless to wait patiently for the perfectly immune bee to turn up; for while this is being done the malady is getting ahead of beekeepers, and devastating their apiaries right and left.

There is little hope of a permanent cure being established, for the simple reason that no one knows he has the disease until the bees are flopping about on the ground and dying rapidly in front of their hive. Stocks in such condition are beyond any possible treatment, and few there are indeed who can detect the trouble in any earlier stage than this. Usually the strongest and best colonies succumb first, owing, no doubt, to the greater amount of diseased honey that is brought home; and the apiarist who is well informed on diseases could, by watching carefully the first few crawlers, with abdomens swollen and wings split, collect enough evidence to prove the case without waiting for the bees to die by the hundreds before the colony is destroyed.

It would seem that the greatest move that can be taken in checking the spread of disease is to tackle the means by which it is conveyed from hive to hive and apiary to apiary. Beebooks tell us that the Isle-of-Wight malady is spread by the water in pools and other drinking-places where healthy and diseased bees are wont to visit; by the passage of drones from infected to clean colonies by the carelessness of the owner in not keeping himself or his tools thoroughly disinfected; and also by robbing. For myself I have enough evidence to convince me that robbing is responsible first, last, and every time.

Since the days of the old straw skep the keeping of bees has increased fourfold. Both hives and apiaries are more numerous than ever; and in favorable localities they follow each other in a continual chain running for miles. When the Isle-of-Wight disease appears it soon spreads from one to the other, and in a manner that shows plainly that robbing is responsible.

As soon as a colony is first attacked by the Isle-of-Wight disease a general disinclination to work becomes noticeable. The bees loiter about on the alighting-board, and the hive is no longer the scene of activity it formerly was. Soon the colony dwindles, at first slowly and then more rapidly, until none but the youngest bees are left.

The combs are generally full of stores, and a hive in this condition contains enough disease germs to infect a county. Frequently the unsuspecting owner sees nothing amiss until the stock is set upon and robbed out completely. Sometimes the trouble is noticed; but the beeman—loth to destroy the few hundred bees that remain—leaves the stock alone, hoping the bees will pull round; and so the robbers do the work that he himself should carry out. Quick action is what is needed most. When a hive shows the first symptoms of disease the bees should be destroyed, and the entrance closed securely until the interior can be dealt with properly.

This can be done with cyanide of potassium, or by a charge of lighted sulphur burned under the frames. It might be worth while to use sulphur and so save the honey, as cyanide renders it poisonous. The combs can be rendered into wax; but the dead bees, quilts, frames, etc., must be burned, and the hive thoroughly disinfected.

The chief means of infection is thus quickly removed before harm follows, and it may be that this will end the trouble—if not permanently, at least for some time. As



A Cheltenham skeppist and his home where honey is retailed.

regards precautions it is better to have many apiaries of a few colonies than many stocks in one apiary.

With bees scattered, it is much easier to control the spread of disease, while there is always a chance of getting a crop of honey from the healthy stocks. The common practice of exchanging brood and super combs at extracting or any other time is to be condemned. It is a simple matter to number both hives and supers, and return the combs to those from which they were taken.

Syrup fed to the bees should always contain some strong medicinal agent, while the best winter food for disease resistance is sealed honey and medicated syrup, half and half. Izal is reported to be an excellent preventive of disease, and useful as a disinfectant for washing out hives, etc.

It is the duty of every enlightened beekeeper to hunt up his neighbors to see if their bees are clean or diseased, and to help them in applying the same treatment or precautions that he himself is taking. Happily there are signs that greater care is being exercised all round; and if the Isle-of-Wight disease has the effect of waking up beekeepers to their full responsibility, the losses through this and other causes will

be reduced to a minimum, and it may yet prove a blessing in disguise.

A HILLSIDE APIARY.

One of my out-apiaries on the Cotswold Hills is situated in the heart of the sainfoin country, and the honey is very light in color and of a most delicious flavor.

We get but few bee-flowers till May is out, so plenty of honey in the autumn is necessary to carry the bees through the winter and early part of the year. A sheltered position and a good honey-house are two things of importance in out-apiary management, and this yard is well situated for both.

The other picture is that of a quaint Cotswold cottage, the home of a skeppist whose rustic bee-garden of straw hives is to the right of the house. This is also the village postoffice and general store, where quite a lot of honey is retailed over the counter.

Every lover of nature enjoys the Cotswold Hills with their delightful views and picturesque hamlets. An air of quietness always seems to rest upon them, and they are far enough away from towns still to retain much of their rustic beauty.

Some of my pleasantest memories are of the hills on the hot, sleepy afternoons of summer with the rich flat meadows and



An air of quietness belongs to the Cotswold Hills.

bare green downs in the distance, where the brown cattle chewed noisily around me, and the weeds wavered darkly and indistinctly in the bed of the stream by the old mill.

There was a little wood through which the water flowed, and one could esconce himself behind bushes, while the trout leaped out at river-flies, and the reflected leaves shimmered in the pools.

At last the long day would wear to a close, and the water ripple on, golden in the sunset, with wonderful reflections and dark-green shadows. Then one would wander back to the high road through a peaceful stillness in which the buzzing of insects and the movements of the cattle seemed almost painfully loud, and while the last beams of sunset caressed the dark pool beneath the glimmering weir.

Cheltenham, England.

EDUCATING THE PUBLIC TO THE USES OF HONEY

BY HENRY REDDERT

The average person knows too little about honey. Some time ago I had a conversation with a honey-dealer who disposes of about a million pounds a year. Among other things he said, "It is true that not enough honey is used by the public, considering the production." The greatest amount of honey consumed in this country is handled by dealers and brokers. They set the price according to their sales. How shall we educate the public?

We see large posters on fence and billboards lining the city streets and country roads, advertising syrups of all kinds, newspapers and magazines advertising the merits of sweets for the use of the household, but seldom if at all does one see a sign of

any kind lauding the uses of good pure honey. If it does, it is always in connection with some concoction. No wonder people know of honey only as a cold-cure or the like. This cold-cure business is not big enough to consume the large bulk of honey produced every year, neither does it convince the public that honey is a food.

If honey could be placed on the table of every family, and used as other sweets, as it should be, no beekeepers would have occasion for complaint as to the disposal of their crops at a fair price. In small towns with only a few scattering beekeepers, and the inhabitants of average intelligence, the honey produced can easily be disposed of;

but in large centers of population people know of honey only by hearsay.

Here lies the key to the problem. Who will open the eyes of the public? How can we teach the public that honey is the best of sweets? How can we make them understand that children fed on honey instead of glucose and the like will have stronger kidneys and be healthier as they grow up? I'll answer the questions. The

farmers' institutes, through the farm and home journals, and county and agricultural papers, should push the uses of honey in all cases where sweets are consumed. Teach the students in colleges and schools that honey is the one true sweet that nature affords, which cannot go wrong if properly used, provided it is well ripened and seasoned by the bees.

Cincinnati, Ohio.

THE "OUTLAW"

BY HIMSELF

On Christmas day, 1914, I took a walk in the park and noticed that there was considerable eucalyptus in bloom; and, although the day was a little chilly, still there were quite a few bees at work on the blossoms. I examined some of the bloom and found that they contained drops of honey almost as large as drops of dew, proving that, for the eucalyptus, warm weather is not essential to the secretion of honey. The walk

which I, in my desire to avoid trouble with the authorities, was at last forced to cache my hive of bees on a roof.

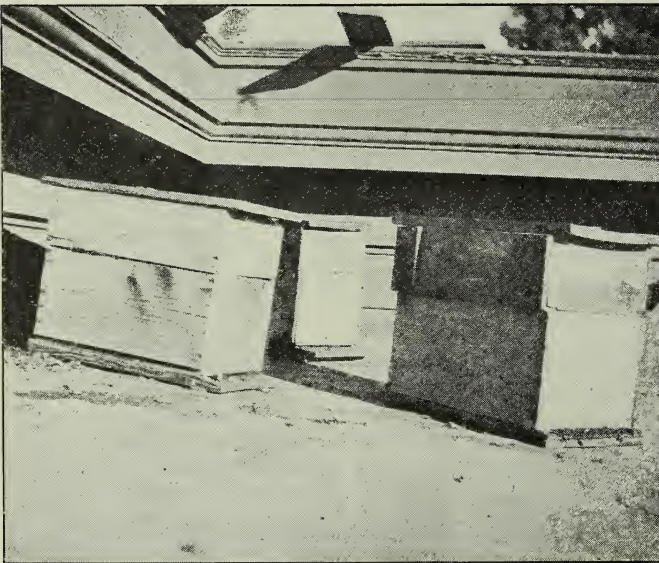
The year has been a fairly prosperous one for me. My one colony was increased to three; and while I did not give them the attention that they might have had, by reason of the difficulty involved in obtaining access to the spot where the hives were located, I nevertheless secured something

like 150 pounds of comb honey, this honey being in the form mentioned in another article.

But to finish the day, this Christmas of 1914 I went up on the roof and overhauled the bees (think of that, you anchorites of the snow-bound North). I found that one of my three colonies was at work. This colony was doing quite a little comb-building and storing considerable honey. I took off three frames, a total of about twelve pounds, from that colony. This honey had been gathered within the previous six weeks,

and by one of the increase, the queen being a daughter of the queen in the original colony. The two other colonies seemed to be loafing and were storing no surplus.

As to the picture, perhaps some person may take me to task for the manner in which the hives are arranged. To such I wish to say that the arrangement or position shown in the picture is not the regular



The outlawed apiary, far from prying eyes.

also brought to my own mind the fact that, while I again became a beekeeper by the merest accident, yet I have as much interest in bees as ever.

It is now a year since I related the manner in which I became a beekeeper by finding the small after-swarm on the pepper-tree bough; of the city ordinance prohibiting the keeping of bees; and the manner in

position that they occupy, but is just a pose that they assumed for the occasion, the reason being that I could not get them all in the picture when the hives remained in the position they regularly occupy. So I moved them up together so that they could have their pictures taken and all appear in one family group.

As to the coming season, I have decided (that is, for the present at least) that I will increase from the three colonies to six, and have been debating in my own mind from which colony to rear queens for the increase, and have about decided that they shall be from the old queen. While it is true that, at the time of writing this, the

old queen has produced no surplus honey for a period of two months, and that one of her daughters has been doing good work during all that time, the question still remains in my own mind whether the mother is not more apt to produce queens the equal of this daughter than is the daughter to produce queens of her own equal. I will state, though, that I am still open to conviction; and if some of the wiseacres can convince me that I have better chances of obtaining queens of the desired quality from the exceptional daughter than from the mother, I am ready to change my contemplated procedure.

SWEET CLOVER ON PEATY SWAMP SOIL

Two Good Crops the First Year from the Seed

BY HENRY STEWART

For a number of years I have been producing sweet clover mainly on peaty swamp soil. Those familiar with this soil know that it is usually very deficient in potash, is very loose, and ill adapted to raising other crops; but we have here no soil on which sweet clover does better. In February last, Stewart & Hansen seeded fifteen acres to white sweet clover. The soil was very loose and ashy, and some of it so deficient in potash as to produce no corn without fertilizing. This seeding was done on oat stubble by simply scattering fifteen pounds of unhulled seed per acre on the snow—no inoculation, no fertilizers, nothing—only scattering the seed. The stand was perfect. The soil on four acres of the fifteen was extremely loose and ashy. On this section during the severe drouth in May and June the plants suffered severely. The first cutting was merely clipped to destroy the weeds, and left on the ground. The rest, when cut July 13, was a heavy stand and stood from twenty to thirty inches high. When the second cutting was made, September 20, the plants on the loose section had developed their roots and were thrifty, and yielded a fair growth of choice hay. On the rest of the field there was a growth even larger than the first cutting; in fact, it was too large. It was the mistake we made with each cutting in letting the growth get too large and begin to become woody. The first cutting should have been made as early as July 1, the second in August, and the third in October, and we would have secured a better quality of hay and a larger tonnage.

I have been seeding sweet clover with

oats on this loose ashy soil for a number of years. It does not always secure a perfect stand, but it always produces much elegant fall feed; and with a good stand and favorable weather conditions it frequently affords a good cutting of hay. When the roots are fully developed on this loose soil, nothing will beat the rapidity of its growth. Many fully developed stalks will attain a height of ten feet.

Our peaty loam ranges from two to six feet deep with a clay subsoil; and, as is always the case under peaty loam, this subsoil is very rich in potash. I may be wrong in my conclusions; but it is very clear to me that the reason why sweet clover can thrive and make such a wonderful growth on this peaty soil on which other plants fail is owing to its deep root system. While surface rooting plants are famishing on this loose soil for want of nourishment and moisture, sweet clover with its deep roots is thriving on an abundant supply far below the reach of the roots of other plants. The root system of sweet clover is enormous. There probably is no field-crop plant that will send its roots so deep and so completely fill the ground with roots as will sweet clover. This whole root system dies the second year of the plant's life, and goes back into decay. If it is true that this root system is built up from potash secured from the subsoil, and from nitrogen secured from the air, then the decay of these roots must not only add nitrogen but must also add potash and other mineral elements as well, and will materially help the soil to farm out and become better, as soil experts

tell us is the case from decaying plant roots on shallow peaty soil.

There is a thought here worth considering; for any plant that will work our potash-mines free of charge, and produce profitable crops, will go a long way toward reclaiming the fertility of this land, and beats securing the potash from the German mines at the present war-time prices.

DIFFERENCES IN GERMINATION OF GOOD SEED.

Last winter I became very much interested in testing sweet-clover seed for germination. I secured as many samples of seed as I could, and secured germinating tests from them. It was really interesting, as but few of these showed a germinating test of 50 per cent, and some as low as 20 per cent, but it was clear that this was not caused from poor seed, as there was practically none rotted; but the ungerminated seed was as hard as little bullets. I soaked one sample for six weeks without phasing this hard seed. I then removed some of the seed and cracked the shell, and in three days they were swelled to three times their original size, and sprouted. I secured one sample, however, that in three days showed a germinating test almost perfect. I pro-

cured some of this seed and seeded with oats and secured an elegant stand.

Now there is no question about the great difference in seed, and that this hard seed has much to do with poor stands on spring seeding. But that this hard seed can not be considered poor seed, there is no question; but the question may be, "Which is the best?" The possibility is that each is best in its proper place. For spring seeding I don't believe there is a question as to the superiority of the easily germinating seed.

For ages sweet clover has been an out-cast, and it has been a case of the survival of the fittest. In its wild state the seeds of sweet clover fall on the ground in August and September, and but very few of them germinate, but they lie there, resist the rain and sun of autumn, and, like heartsease and many other weeds, do not germinate until spring. It is barely possible that for pasture or for permanent growth this hard seed may be a blessing in disguise. The easily germinating seed may all germinate out of season, and the tender plants be killed by the frosts of winter.

There are many things about this new but old plant yet to be fully understood.

Prophetstown, Ill.

EFFICIENCY IN APIARY OPERATIONS

How to Do and How Not to Do. II.

BY R. F. HOLTERMANN

Fig. 1 shows two students standing over a hive. One is smoking the bees, the other removing or inserting a comb. They are standing. To do this with one hive would probably make no great difference, although the principle is wrong. But when it comes to do work in this way hive after hive and hour after hour—yes, day after day for a season—it makes a very great difference between this method and the best method.

Fig. 2 shows the one who is manipulating the combs properly seated on the edge of a hive-cover; but the one who is doing the smoking is standing—a waste of energy. But he is doing something else which is decidedly wrong. Now let the readers of GLEANINGS, especially the beginner and the thoughtless, not read any more until he looks at the illustration and sees what is wrong. The mistake which will be obvious to many is that the one operating the smoker is standing right in front of the hive, preventing the field bees from entering it. I have had students with me for a considerable

time who, after being reminded of this mistake, still did this; and in confidence let me say that, at very long intervals, when much preoccupied I can be seen doing this my-



FIG. 1.—Standing up—a waste of time in the long run.



FIG. 2.—Puzzle picture: besides standing, what other mistake is one making?

self; but this does not make it any more correct. When a person tells me that something I have done does not square with scripture teaching I always say I am thankful for this much, that my conduct does not change the teachings of scripture.

In Fig. 3 we have things as they should be. Both men are seated. There is no unnecessary energy expended in sustaining the body, and the hands get to the work with as little effort as possible.

Some may ask, "Is not the narrow edge of a hive-cover a rather hard seat?" Yes,



FIG. 3.—Comfortable and convenient—no wasted energy.

but it is always convenient, and is better than none.

I have sometimes thought it would be a good plan to have a light stool, like a milking-stool, with one leg, strapped behind one. When one is working all day in an apiary it would be a great saver of time and trouble. One could then sit down anywhere without any difficulty. There could easily be a stool in each yard, or it could be carried from yard to yard.

Brantford, Canada.

HONEYBEES AS POLLINIZERS OF TROPICAL FRUITS

BY JOHN W. LOVE

The field of flower pollination and the relation of insects to vegetable biology is as intricate as it is vast. It has its traps and pitfalls for the unwary investigator. like those contrived for flies by certain ingenious varieties of orchids. Conclusions regarding the inter-fertility of common fruits must not be accepted unless based upon patient, repeated experiments. With the same caution we must guard against accepting chance assertions made by bee-keepers or fruitgrowers in regard to the value of honeybees in the pollination of tropical fruits. Their agency has been firmly established among the common fruits and vegetables of the temperate zone, but, unfortunately, not so firmly among the fruits of the tropics, except the citrus.

An article by Professor E. G. Baldwin on the pollination of oranges was reviewed editorially in the March 15th issue. Two or three bulletins have been published by

the Florida Experiment Station on the pollination of citrus fruits, but these are now out of print so far as I am informed. This is practically all the authoritative information on the subject. Information in regard to other tropical fruits and semi-tropical fruits such as bananas, coffee, cacao (cocoa), cocoanut, figs, olives, and pine-apples is very meager.

The blossoms of the orange may be pollinated by the winds; but, like apples, pears, and cherries they are more effectively pollinated by insects, chief among which are honeybees. On dull and damp seasons their presence is necessary for complete setting of the fruit. A number of Florida, California, and Porto Rican growers are keeping bees in their orange-groves for this purpose. The honey from orange-blossoms is most delicious, and has been called "the honey of the gods."

What is true of the pollination of the

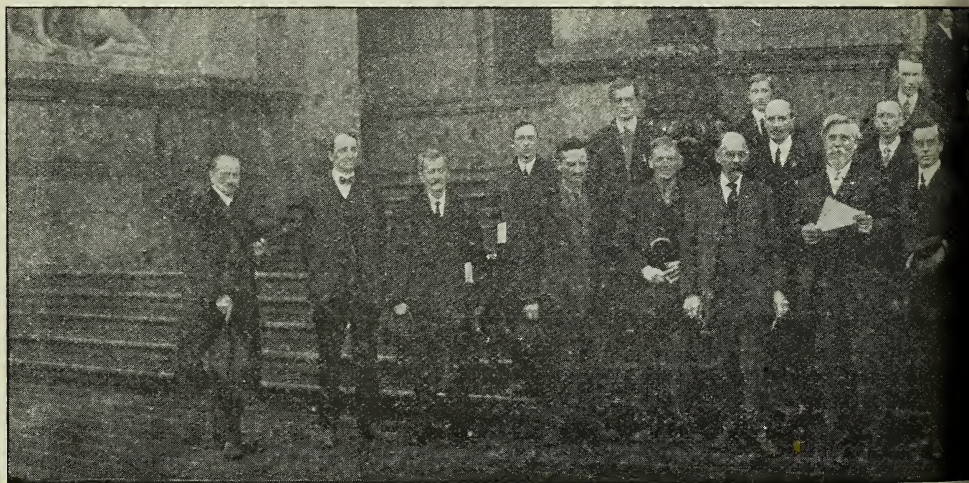


National Convention, Denver, Colorado, Feb

orange is likewise the case in the pollination of lemons and limes, writes Mr. John Barclay, Secretary of the Jamaica Agricultural Society. Although it is extremely dangerous to reach any conclusion unsupported by tests, the guess might be risked that one other prominent citrus, the grapefruit, derives benefit from the visits of honeybees.

Porto Rican coffee-planters are becoming

interested in honeybees as pollinizers of the coffee-blossom. In certain seasons, when there is a great amount of rain during bloom they are particularly useful. The wind will carry pollen only in dry weather; but the bees transfer it in wet weather from one blossom to another during their honey-gathering. According to the Porto Rican Experiment Station, a coffee-grower has



Convention of the Pennsylvania State Beekeepers' Asso

Rear row heads as they come, left to right:

1. _____
2. _____ Alexander
3. _____
4. H. C. Klingler, Sec'y
5. G. H. Rea
6. C. C. Brinton
7. John L. Du Bree
8. Mrs. _____
9. A. H. Cassell
10. Miss Kirk

11. Samuel Gochenauer
12. Jos. A. Eibel
13. Julius A. Roehm
14. _____
15. Howard H. Mann
16. Jos. P. Kirk

- Front
1. A. M. _____
 2. L. K. _____
 3. _____
 4. _____
 5. _____



National Convention, Denver, Colorado, Feb. 17, 18, 1915. For report see page 217, March 15.

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stated that coffee-trees are more productive when an apiary is close at hand than when there are no colonies in the vicinity. Mr. J. T. Crawley, director of the Agricultural Experimental Station at Santiago de las Vegas, Cuba, writes, "I am informed that some coffee-growers keep bees on their plantations with the special view of having the fruit-blossom fertilized." Mr. Barclay

states that bees pollinate the coffee-blossom. No comparative data have been collected. Honey from the coffee-blossom is quite delicious. The bloom lasts only about a day, but the plant is in bloom for a week at a time, three or four times a year.

The banana produces large quantities of pollen, and is freely visited by honeybees. The plant has been called the most prodigal



Convention of the Pennsylvania State Beekeepers' Association, Harrisburg, Feb. 23-24. See page 215, March 15, 1915.

Rear row heads as they come, left to right:

1. ——— Alexander
2. ———
3. ———
4. H. C. Klinger, Sec'y

5. G. H. Rea
6. C. C. Brinton
7. John L. Du Bree
8. Mrs. ———
9. A. H. Cassell
10. Miss Kirk

11. Samuel Gochenauer
12. Jos. A. Eibel
13. Julius A. Roehm
14. ———
15. Howard H. Mann
16. Jos. P. Kirk

- Front row, left to right:
1. A. M. ———
 2. L. K. Better
 3. ———
 4. ———
 5. ———

6. J. R. Rambo
7. Dr. H. A. Surface, Pres.
8. F. G. Fox
9. J. O. Buseman
10. J. S. Shope

11. C. N. Greene
12. L. B. Huber
13. A. N. Coons
14. F. J. Strittmatter
15. ———

16. ———
17. Dr. Percival Herman
18. ———
19. ———

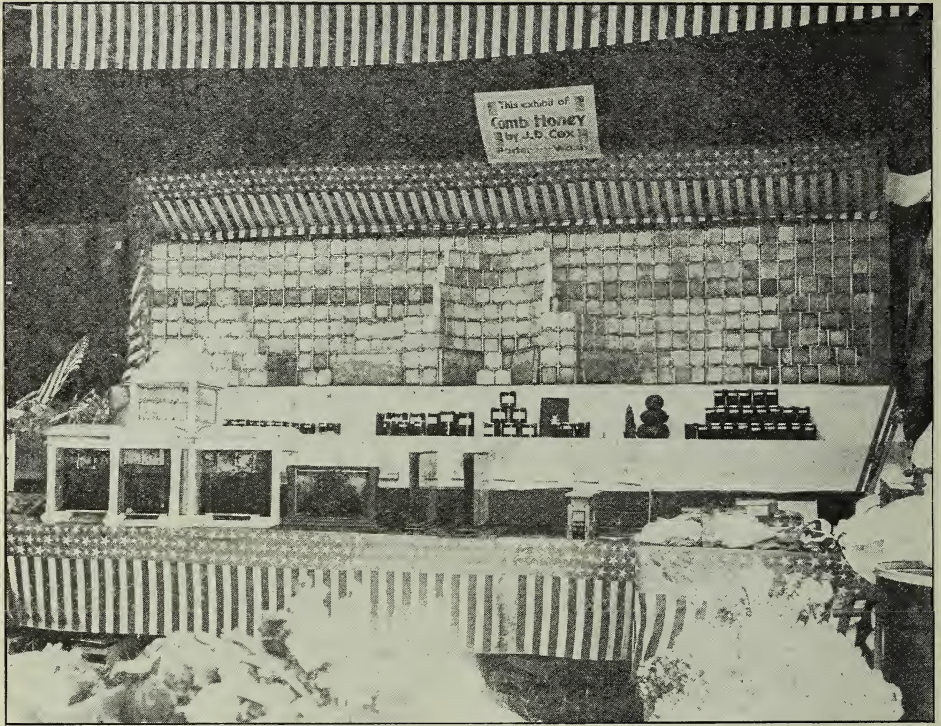


FIG. 1.—One thousand sections of comb honey from the J. D. Cox apiary.

producer of pollen in the world, one whorl of stamens sometimes yielding enough to be gathered up with a teaspoon. Nectar is secreted with equal profusion, and bees have no difficulty in securing it. Under cultivation the banana is propagated by planting pieces of the stalk and suckers. It has almost entirely lost the power of maturing seeds. When pure seed of a pure-bred plant is desired, so great is the effect of the bees and other insects that it is necessary to bag the flowers.

Bees are sometimes maintained in California almond orchards to pollinate the blossoms. If the grower wishes certain varieties, he should mix with certain others in order to secure the effect of cross-pollination. Very likely locality is important. It is wise to plant with the view both to the desirability of the varieties for market and to their inter-fertility in the locality.

Although part of the palms are pollinated by the insects, the date palm is wind-pollinated in its natural state. For the past four thousand years of its cultivation, how-

ever, man has been artificially pollinating it. The date is an example of the separation of the sexes on different trees, so that self-pollination is impossible.

Apparently the blossoms of the cacao or cocoa tree are not pollinated by bees. Mr. Barclay, of the Jamaica Agricultural Society, states that the blossoms are frequented by small insects which likely carry the pollen; but he is quite certain that cocoa is not fertilized by bees.

The blossoms of the fig are pollinated by a certain special insect of its own, a species of gall-wasp. The uncultivated form of the common fig, called the caprifig, is the male. Its fruit is hard and useless, but is the home of a small gnat-like gall-insect which, in escaping from the orifice, covers itself with pollen. The female runs to the young blossom, which it enters to lay eggs, and in doing so effects the fertilization of the blossom. Were it necessary to produce the fertile seed of the fig, male trees, or caprifigs, would have to be planted close to the female fig-tree.

A PACIFIC-COAST HONEY EXHIBIT

BY W. L. COX

Here are some photographs of honey and bee exhibits at the Chehalis (Washington) county fair.

Figs. No. 1 and 2 show 1913 exhibits. The reader will observe Fig 1 bears a display card with the name J. D. Cox. Mr. Cox is my father, and owned the comb honey. One thousand sections were used. The extracted honey, beeswax, and bees were mine. The exhibit was 16 feet long.

Fig. 3 illustrates my home-made observation hive holding three eight-frame colonies. It has taken several blue ribbons.

In the 1913 program there were demonstrations each day, and short talks on bees, which proved very interesting and instructive. Several beekeepers present contributed to the program.

A part of the 1914 exhibit is shown in

Fig. 3, which was taken before he had the exhibit finished, though it conveys a good idea of what we had on exhibition. The

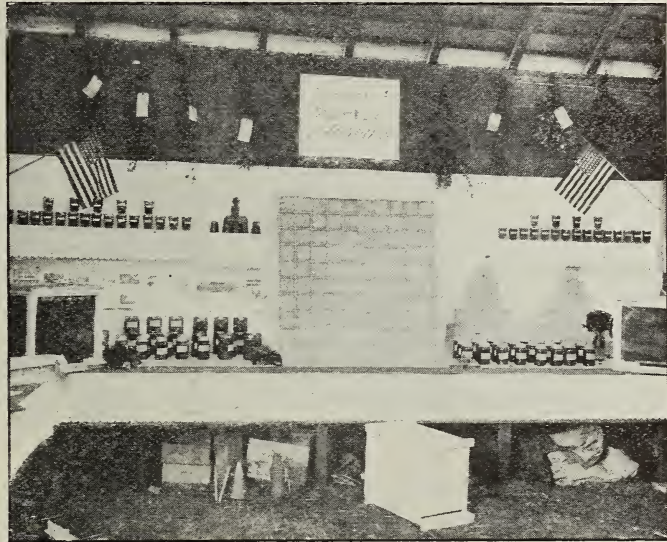


FIG. 2.—Bee products from W. L. Cox's apiary.

display was all mine except the little case of comb honey in the lower left corner. I had a corner space using 24 feet. The view shows the 16-ft. wall space containing the honey and wax. Portions of two observation hives are shown but not clearly. The end space not admitted to the photograph contained the extractor and other equipment used in the apiary.

The leading feature of this year's program was live-bee demonstrations by Master Roy Cox, aged eight years, who took the queen from a colony and carried her around for the crowd to see. He worked bareheaded and barehanded, with sleeves rolled to the elbows.

Porter, Wash.

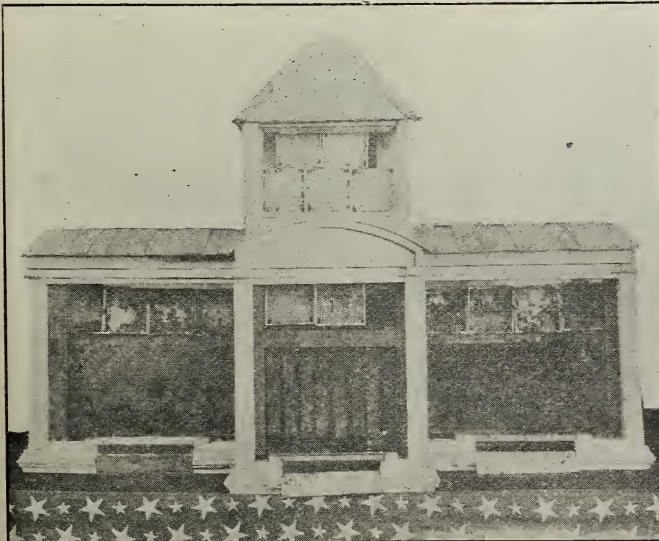


FIG. 3.—Three eight-frame colonies are housed in this observation hive.



A Louisiana swamp is an unlimited source of nectar.

MAKING INCREASE IN A SOUTHERN SWAMP

BY J. D. BAILEY

My apiary is located five miles from New Orleans in the heart of a Louisiana swamp where an unlimited field of honey-plants abound. I have been keeping bees for a number of years as a diversion, but last year I moved them out to a friend's place and we have determined to increase our colonies and sell the honey. We started in the spring with fifteen colonies and have increased to forty-two, which we hope to have next spring.

The honey-house was put up by myself and a friend, both novices, at a cost of less than ten dollars, as all the material was second-hand. In the upper story our extractor, Peterson capping-melter, steam-

heated uncapping-knife, etc., are located. The honey runs direct from the extractor through a large pipe to the tank-room below, where it passes through an Alexander honey-strainer, and thence into a large tank with a capacity of five barrels. From there it is drawn off through a honey-gate direct into the containers.

Besides our bees we have an assortment of oranges, grapefruit, kumquats, loquat, dasheens, and last, but not least, a beautiful feijoa sellowiana.

Our bees are building up rapidly for winter on goldenrod, there being hundreds of acres within easy range.

New Orleans, La.

NO DANGER THAT WHITE CLOVER HAS WINTER-KILLED

BY ADAM LEISTER

[Mr. Leister is the farmer beekeeper whose advice on clover and other topics we have sought so often. Knowing that there has been little snow in most parts of the country this spring during the alternate freezing and thawing, we asked our friend what he thought about the clover prospect. His reassuring reply follows.—ED.]

I have made careful observations on the effects of the freezing and thawing, and heaving of clover. I can say, without hesitation, that there has never been a season with so little heaving as the present one. I hear you ask, "How do you account for

this?" The observing eye has long discovered that a wet season is the most favorable condition for heaving. Since this has been an extremely dry spring, and since the season is so far advanced, the danger from heaving is entirely past.



The honey-house cost just \$10.

We may look forward to more than an average crop this year, and why? Those who have to do with seeding and harvesting the clover crop know well the injury from the clover-midge. This destructive enemy has almost entirely disappeared—at least in this locality, so far as my observation goes. I am not sure if this insect affects both red and white clover, but I notice that both white and red thrive well under similar con-

ditions. Another important factor in the conclusion is the very light rainfall for the spring months. To make up for this we are sure to get an abundance later. In summing up I will say that conditions are perfect, with about three-fourths of a stand of white clover, and a full stand of the red, with the promise of a good soaking at haying time.

Medina, Ohio.

HOW BEES IN ONTARIO HAVE WINTERED

BY MORLEY PETTIT

It is, of course, too early to give any definite report on how bees have wintered in Ontario; but letters are beginning to come in, and heavy loss is expected in all apiaries which were not carefully fed last fall. This is only what is to be feared, as the failure of the honey crop in 1914 left the hives weak in stores, and the failure to rear young brood properly the latter part of the season made most of the clusters small for going into winter quarters. To make matters worse, the outbreak of the European war caused a sharp rise in the price of sugar just before feeding time; and those who had not purchased sugar early even experienced difficulty in getting a supply at any price. Although the Dominion Government rendered considerable as-

sistance by corresponding with sugar-refiners, and urging them to make sure that beekeepers get their required supply, many beekeepers who were not specialists decided that they would let the bees take their chances, as they had not given any profit during the season.

The few reports which have been received indicate that clover may not be in the best of condition, but they also indicate a continued live interest in beekeeping, as renewals of memberships to the Beekeepers' Association are coming in quite freely, and numerous requests are being received for information as to where bees can be purchased.

Guelph, Canada.

A CHEAP AND EFFECTIVE GROOVED FEEDER

BY E. F. ATWATER

A year or two ago Mr. Jay Smith described his "Perfect feeder," built along the lines of the old Cary feeder. We usually have some colonies that use a disproportionate amount of stores, and we usually have quite a supply of feed, consisting of boiled honey from diseased colonies or other cull honey; and so to connect the two to the advantage of the needy colonies, and to our profit, we designed and built several hundred feeder-bottoms.

As we could not spend the time to build up feeders from countless little sticks, as

was done by Mr. Smith, and as no feeder holding less than a quart appeals to us as being very useful or practical, we had clear 2 x 6 lumber cut in suitable lengths for the ten-frame bottom-boards, and grooved as shown. The connecting holes between grooves are cut with a special tool.

We prefer to shove the hive forward on the bottom 1 $\frac{3}{4}$ inches, to expose the feeder, then lay a strip $\frac{3}{4}$ x 1 $\frac{3}{4}$ x 16 across at the rear, for upon removing this strip the feed can be instantly poured in and the strip replaced. This can be done so quickly that no smoke is needed.

In early spring, if we find some colonies very short of stores we simply shove the hive forward, contract the entrance so only one or two bees can pass, fill the feeder with feed, and replace the strip.

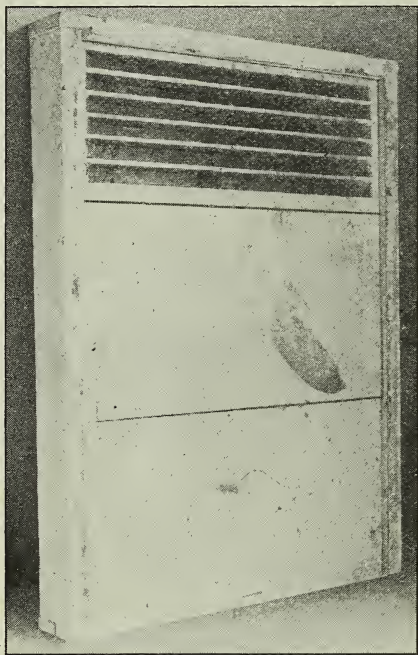
Sometimes by the time we get over the yard the first colonies fed have licked up the quart of feed. Then we fill the feeders again (using a little smoke), often three times in an hour. That yard is safe for some time, and heavy colonies have not had their prospects injured by giving some of their honey to the light ones.

For regular stimulative feeding this feeder-bottom is the best. A thinner feed, and enough of it to do some good, can be given daily, or as often as desired.

In this connection we have found no considerable advantage in daily feeding except in queen-rearing, and believe that, even where regular feeding is found profitable, feeding a little more, every second or third day, will give about the same results as daily feeding.

But in any event it will pay to own a lot of these feeder-bottoms of ample capacity, as they are substantial and practical, and have stood the test of extensive use.

Meridian, Idaho.



The single clear 2 x 6 piece, carefully grooved, constitutes the feeder.

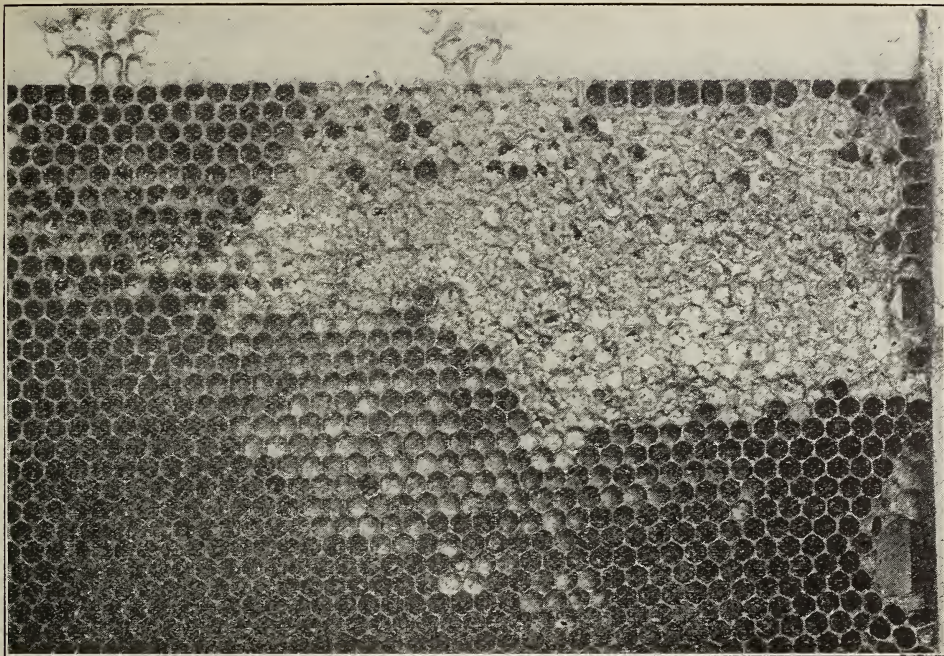
100 POUNDS PER COLONY AND NO SWARMS

BY S. M. CAMPBELL

Our bees are in fine condition, and we are putting on supers. We had a swarm to-day, March 19. So far we have had 20 inches of rain, and expect to get at least 75 pounds of honey to the colony, even if there is no more rain this season. The sages are in fine condition, and should yield a large surplus.

When I was in Texas I kept 145 colonies from swarming in the year 1910, and ob-

tained 100 pounds of extracted honey to the colony at the same time. I did not have a single swarm, and only six colonies built cells. My plan of procedure was as follows: As soon as the bees filled the outside combs in the brood-chamber I made the rounds of the apiary with a super of drawn combs. From each colony I took out the full combs of sealed honey from the outside, spread the brood-nest, and put these empty



Comb containing aster honey granulated so solid that the bees could not use it. Note the granules in the open cells at the left. These were almost like flint. The bees had gnawed the cappings from the other cells but had left the honey.

drawn combs in the middle. This gave the queen all the room she needed; and as fast as I got a super of full combs of honey I put it on top of the hive until I was ready to extract. The hives were tiered up three stories high (ten-frame hives), and at the end of the season they were full of three-banded Italian bees from the floor to the lid.

In these big mountains of California it pays to have apiaries located close together. The mountains are full of canyons with high ridges between, and the bees do not seem to fly over these ridges, nor care to go over them to the next canyon, perhaps only a mile away. For this reason smaller apiaries, say 100 colonies or so, are more logical about a mile apart. I have been in this country two years, and am satisfied that this is the best plan. In Texas or any level country, bees will fly a long distance in search of nectar, and in such localities one can keep much larger apiaries, but they

must be further apart. Small apiaries are nicer to work in, however, for one can get through the yard before the bees are hardly aware of it. This is quite a big item; and then, besides, when a poor year comes the small apiary will have enough stores to winter on, while the larger one is likely to need feeding.

Most of the writers tell us to have the colonies strong when the honey-flow comes on, but fail to tell the way to keep them strong. The best way to have a hive full of bees when the harvest comes is to have plenty of honey in the combs at the right time. Very few hives have too much honey, for the bees turn the honey into brood. This point can hardly be made too emphatic to the beginner, and even the veteran would do well to give the subject more thought—making sure that his colonies have plenty of stores.

Nordhoff, Cal.

ASTER HONEY AS A WINTER FOOD FOR BEES

BY JOHN H. LOVELL

After corresponding with beekeepers from Michigan to Georgia I am convinced that aster honey, if properly ripened and sealed,

can be safely used for wintering bees. Any honey, if unripe, would probably be open to objection. Mr. O. H. Townsend writes

from Michigan that he sells aster honey at the same price as that of the red raspberry, and that it has a fine flavor and a good body. He attributes its poor reputation for winter stores to its tendency to candy. Mr. Raleigh Thompson, of Underwood, Indiana, who has had great experience with aster honey, also reports that it crystallizes very quickly. It is so thick that it is difficult to extract. His bees winter finely on it with very little loss. The flowers are so abundant in his locality that the fields at times are as white as snow. Others in the central states have been equally successful. Mr. T. W. Livingstone, of Leslie, Georgia, says that it candies quickly if not sealed; but that when he lived at Dalton his bees depended on it for winter stores. Pure aster honey is nearly as white as that of white clover, but usually it is amber-hued, due to the presence of goldenrod honey or that of other autumn flowers. It is very sweet, with an agreeable flavor. Like goldenrod nectar, the nectar of the asters has at first a sour or rank odor which soon disappears.

Waldoboro, Maine.

[We have had good, bad, and indifferent reports of colonies wintered on aster honey. So far most of the reports have indicated trouble, as in the following:

Bees wintered badly. I had them all in the cellar, but they had dysentery from the aster honey. I have lost one-third of them—my heaviest loss in 30 years.
Solon, Ohio. H. C. LANE.

Our own bees having aster stores have shown more signs of dysentery than any colonies we ever wintered before. Colonies in the same cellar having stores of sugar syrup were clean and dry when set out.

One of the great drawbacks to aster honey, as mentioned by Mr. Lovell, is its tendency to granulate so quickly and so solidly. The illustration herewith shows the almost "gritty" appearance of the honey in the open cells. Many of the combs show the cappings gnawed away, and the honey in the cells so solid that the bees apparently were unable to use it.

Query.—Why should the solid aster honey in the cells be less available than the solid cakes of candy made from boiled syrup? See following article by Geo. H. Rea.—ED.]

STARVATION OF COLONIES ON CANDIED STORES

BY GEORGE H. REA

Reports of bad wintering are numerous this spring. The description of symptoms usually given indicates that the condition is largely due to aster honey gathered last fall for winter stores. If this honey has acted everywhere as it has in Medina, the wonder is that any bees with no other winter stores are alive.

About the middle of March the writer, with Mr. Arlie Pritchard, visited the Blakeslee yard of the A. I. Root Co. The covers of the great quadruple winter cases were lifted, and a peep taken at the clusters. The weather was too cold to do more than that, and, in fact, it has not been fit to permit manipulating colonies so far this spring (March 28).

Out of sixty colonies three were found dead. Sealed stores could be plainly seen along the top-bars of the frames in these colonies, while the bees were mostly on the hive-bottom. A small cluster in each case was still clinging to the combs. They had starved to death with plenty of stores in the hives. In fact, investigation showed that they were actually clustered on candied honey which they had uncapped but were evidently unable to consume. That seems

strange at first thought. Bees will eat hard candy, but this is the hardest candied honey that I have ever seen.

The illustration on preceding page shows this hard honey in the cells.

The wonder is that these bees were not all dead. Had it not been that at that time the weather warmed up enough that they could get out in small numbers and get water, they probably would have all died.

In previous years, when feeding hard candy I have noticed that the bees would get along very well as long as the weather was such that they could get out and gather water, but would sometimes die clustered right on the cake of candy during a spell of bad weather. Bees wintered in a moist cellar will use hard candy, while they will be unable to do so in a dry cellar. In the first case the necessary moisture is supplied from the atmosphere. The same might be true outdoors in wet weather—but not when it is cool and dry, as it has been this spring.

[As mentioned in the footnote to Mr. Lovell's article above, the reports from other sources regarding the aster honey are quite conflicting. It has become evident

from the reports of past years that in a locality where the bees can fly frequently, the aster honey does no great harm. Perhaps the bees in these flights bring in the amount of water necessary. However, bee

dysentery is never very bad where frequent flights are possible, and take it all in all, any bad condition brought about by poor stores would be relieved by frequent flights. —ED.]

NOTES FROM GERMANY; WAX-RENDERING; BOILED HONEY

BY J. A. HEBERLE, B. S.

Highly interesting is what Editor Root says, page 921, 1914, about the wax-rendering station in Massachusetts. State Bee Inspector Hofmann-Muenchen has published in the *Muenchner Bztg.* an excellent article about wax-rendering in which he says that, years ago, oil was pressed from seeds with a loss of some ten per cent of oil.

For some time this method has been superseded by extracting with a solvent. The fluid solvent is condensed, and used again and again. This method needs very little care, and is, consequently, very economical. A gentleman interested in wax-rendering called the attention of Mr. Hofmann to the fact that wax could be extracted the same way as oil from seed, and more efficiently than by heat and pressure. Among the various solvents tried, benzine seems to be the most convenient.

An expert chemist has reported that wax extracted with benzine is chemically unaltered, but does lose its odor. This is considered of no importance, since by the process of bleaching the odor disappears also. [For foundation-making, wax with its natural odor will be preferred.—H.]

It has been suggested that wax be rendered as heretofore by heat and pressure, or by the solar extractor, and that only the residues from these methods be extracted by means of a solvent.

The process of extracting with a solvent is very efficient, all but about one-half of one per cent being recovered. This small remainder could be recovered, but it is not economical to do so.

A NEW BOOK ON BEES.

Notwithstanding Europe is under the reign of Mars, and "grim-visaged war shakes its gory head," there appeared the first month of this year a new scientific work about bees. The title is "Leben und Wesen der Bienen"—Life and Nature of the Bees, by Prof. Dr. H. v. Buttel-Reepen, published by Vieweg & Sohn, Braunschweig, Germany, price \$2.00. The author is well known to the readers of GLEANINGS.

This book differs from the many good text-books we have. It is designed to supplement them. It is strictly scientific and impartial. Anybody who wants to study the bees—who is interested in knowing what amount of research and study the bees have been the subject of on the part of men of science, should get this book. Some 23 pages are needed to enumerate the titles of books and journals referred to in this book. In a short notice I cannot give the reader a fair idea of the contents. Especially interesting to me is the tenth chapter, "The senses of the honeybee." It is subdivided into five divisions. I. The sense of location; II. The sense of color and form; III. The sense of sight; IV. The sense of smell; V. The sense of hearing and communication.

About the sense of hearing, I have seen less in current literature than about the other senses; so I give a few items from it. Considerable study and investigation by eminent men on the subject, "Can bees hear?" has not entirely solved the question. Some say the bee has no sense of hearing. It perceives only vibrations. Others say the bee does hear. Among these is the author of the book, but he gives dissenting opinions and references. He gives a very convincing argument when he says that it seems logical to suppose that creatures which can produce a variety of sounds which unfailingly express certain conditions, that such creatures also have the ability to hear these sounds. The beekeepers know of various tones the bees can make—for instance, when a swarm is in the air; when a colony first notices the loss of its queen; when the bees have a good honey-flow; the gay hum when a swarm enters its new home; the war cry of the excited angry bee when attacking. The call of the queen first hatched, and the answer of one or more in the cells, etc. It certainly does seem reasonable to suppose that the bees hear these sounds—or feel them.

The scientist Lubbock has played the

violin for the bees; he blew the flute, whistled, shouted, but they took no notice of it. Others have repeated this experiment with the same result.

The scientist Ed. Hopper, an authority on the bumble-bee, holds that they are endowed with a sense of hearing, while Sladen and Wlad. Wagner hold the opposite view. Ed. Hoffer tried the following experiment with *Vespa media*, De Geer, to see whether or not they would react on sounds the human ear perceives. He hid himself in the bushes, and with a long cane he excited the above-named species by punching and shaking the bush on which their nest hung, at the same time whistling loudly. They came out of the nest pell-mell to attack the disturber. Later he needed only to whistle to bring them out, full of anger, searching for the offender they had heard but could not see.

There is still some uncertainty how external impressions are made conscious to the bees. We beekeepers cannot but be thankful to the men of science who have already revealed many of the wonders of the makeup of the little honeybee. Just think! there are 31,000 minute membrane plates with nerve fibers attached to them, called poreplates, although they have no pores at all, found in the two antennæ of the drone. The thickness of these poreplates is 0.002 to 0.004 of a millimeter, or 0.00008th to 0.00016th of one inch. Their use is uncertain. They are considered too thick to transmit odor, as gases would not diffuse

rapidly enough through them. It is curious that the queen and workers have only about 4000 in both antennæ, but a little larger in size. The author of the book thinks they may help the drones to find the queen at the mating flight, since that is the only service the drones seem to render the colony.

McIndoo's work on the sense of smell, familiar to American beekeepers, is also considered. Sixty illustrations help very much to interpret the weighty contents of the book.

BOILED HONEY NOT SUITABLE WINTER STORE.

Regarding the editorial article, page 4, in GLEANINGS for January 1, I should like to say that I have often heard the opinion expressed that honey with a comparatively small amount of water gives dysentery. A colony suffering from the want of water becomes uneasy, and dysentery results. Boiling changes honey considerably. The loss of water, and the change in the hygroscopic property, are most important for its quality as winter food.

If honey for winter feeding has to be boiled I would suggest that a liberal amount of water be added, and that the honey be stirred so that it may not get on the walls of the vessel too hot while part of it is barely warm. It is usually recommended to dilute honey with water for feeding purposes, the quantity varying up to equal volumes. [We have always diluted the boiled honey that we use for feeding.—Ed.]

Kempten, Bavaria, Germany.

THE SECTIONAL HIVE

BY F. GREINER

In an address entitled "Practical Side of Apiculture," delivered before the Ontario County (N. Y.) Beekeepers' Society last January by Mr. S. D. House, Camillus, N. Y., two sentences struck me as of importance. They were as follows: "We handle hives rather than frames;" and "our wide-frame supers assist us in handling the finished product rapidly." Great masters may make mistakes, to be sure. I am reminded what Dr. Dzierzon once said about the labor-saving mania of the American beekeeper. He said in substance: "As though success depended on the ease or rapidity with which hives may be manipulated, can we not employ women and children (in other words, cheap labor) to do this work?" This was many years ago. In the light of our experience of the past years, who of us on this side of the big water endorses this theory of Dr. Dzierzon?

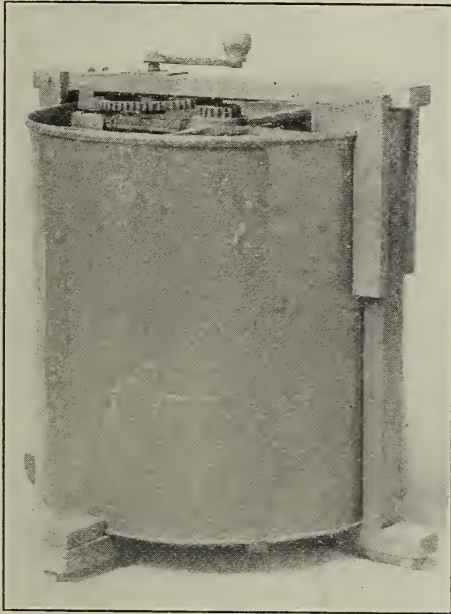
So, I say, possibly Mr. House is wrong. We hear very little said about the sectional or divisible hive, and still less about the wide-frame super. The different photographs of apiaries appearing in every issue of our American bee journals do not indicate that sectional hives are very popular. I have heard extensive and successful beekeepers say that they had a lot of the reversible sectional Heddon hives on the rubbish-pile, and that they could be had for the asking. Notwithstanding all this, one must learn to use a tool right. The best kind of razor, no matter how sharp it may be, cannot be used successfully to cut brush; and the best brush-hook is ill fitted to cut a man's beard if the bristles are never so thick and heavy. The sharpening of a razor is one thing, and that of a brush-hook another. The sectional hive is not to be used in the same manner as the standard L. hive is

used. The attempt will result in a miserable failure.

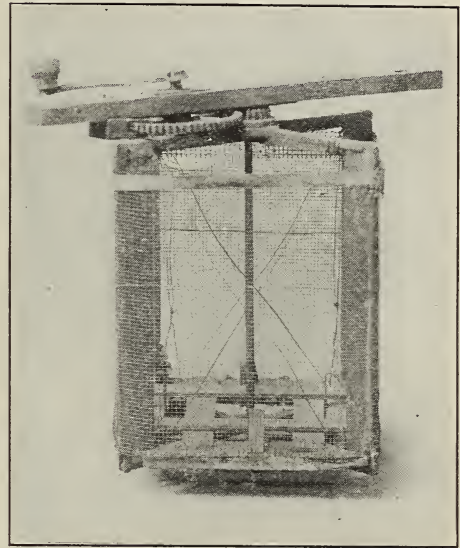
Listen to what Mr. House said about the use of his hive before the convention in Canandaigua:

"When our bees are wintered we do not disturb them till fruit-bloom, when every good colony is given a sectional hive-body full of combs. (The supposition is, every colony has been wintered on two sections, equaling all together eight or nine L. frames.) This hive-body of combs is given in between the two already occupied. The bees will immediately take possession of the combs, and they will be quickly filled with brood. We keep an eye out for the clover-

chamber to remain on the stand which appears to have the most sealed brood. The other two (from each hive) are placed on a new stand with entrance almost entirely closed for the time, or even closed entirely for a few days. The few matured bees left in the combs, and the newly hatching bees, will soon be able to take care of the young brood, although some of the youngest may perish, which is of little account. When increase is not desired the brood-chambers so removed full of brood can be utilized for strengthening weak colonies; or if none are on hand they may be allowed to stand until they have a young laying queen from a queen-cell furnished them. The colonies may



Quinby's original metal-can honey-extractor. See letter from L. C. Root, p. 260, last issue.



Interior of Quinby's extractor. The gearing was made up from parts of an old fanning-mill.

bloom; and when the bees bring in honey at the rate of one pound per day from this source we take two sections of brood and honey away from each colony and give them two comb-honey supers instead. I don't want any sort of bait comb in my supers, as this would only result in pollen-loaded sections. With full sheets of comb foundation pollen will not get into the sections, and an excluder will not be needed. To free the little brood-chambers, which we wish to take away, from bees, we do not brush a bee from a comb but drive them either up or down with a few puffs of smoke. It is done quickly, and we select that brood-

then be united again, removing the old queen.

"With a good honey-flow the colony with its reduced brood-nest will need looking after, for the supers will be filled as by magic. The empty super should always be added next to the brood. The sealing of the honey must take place as remote from the brood as is practical. The cleanest honey, none travel-stained, will result in this way. To provide ample ventilation the hives run for comb honey should be placed on four blocks. This will usually prevent the swarming fever from breaking out. If it should come to the worst, a hive-chamber

filled with comb foundation is given, but this only when queen-cells are being built.

"In uniting the colonies at the end of the honey season the queen in the lower brood-nest is usually killed by the bees. In case we did not take time to hunt out the old queens we proceed in this fashion:

"All honey is removed as soon as finished. By the use of the sectional hive we have no dummies under any part of our supers. Over dummies bees never do the work as when all sections are in close touch with the brood-nest."

I believe, in the above, I have covered about all Mr. House told the convention, and I want to say that I have for some six

years or more handled a portion of my yards along this line. At times I have used a modification of the plan outlined, following Mr. Taylor, of Colorado, and Mr. Hand, of Ohio; and I can say that I am well pleased with this style of hive and its workings.

As to the wide-frame super, I can only agree with Mr. House, having used this style extensively for more than 35 years, and am perfectly satisfied with it, using now no other. It protects the honey-boxes on all sides, thus giving us the cleanest honey with the minimum of labor.

Naples, N. Y.

BEES AND FRUIT-GROWING

BY S. H. BURTON

That bees are an important factor in fruit production has long been proven; and the time is coming when the orchardist will consider a few colonies of bees in the orchard as much a necessity as a sprayer.

With increased spraying we are destroying the beneficial or pollen-distributing insects as well as the injurious ones; and to offset this loss more bees must be kept.

Observations taken at different times in my own orchards show that weather conditions, governing the flight of bees during the time of blooming, have more to do with the setting of a good crop of fruit than any other one factor in fruit production. Here is some very striking proof:

In a peach orchard of mixed varieties are located several colonies of bees; and during one particular season at blooming time the weather was very cool and cloudy, with a cold east wind. Several cold cloudy days followed with drizzling rain, and the bees did not visit the blossoms except at rare intervals, when the sun would warm things up for a couple of hours. The row of trees directly in front of the hives bore an enormous crop, while the trees on the distant side of the orchard produced scarcely a dozen peaches each.

DOES SPRAYING KILL THE BEES?

Under certain conditions the use of arsenicals is very destructive to the bee, and orchardists who have given the matter careful study will adopt means to prevent the wholesale destruction of these most valuable insects. Spraying while in full bloom is not considered good orchard practice. The poisonous spray falling on the sensitive stigma of the flower injures it by burning, and you not only kill the bees but defeat the very

purpose which is sought—that of a good set of fruit. Only a few varieties of apples, notably the Roman Beauty, close the calyx cup as soon as the petals fall, and it is well to begin spraying this apple as soon as possible after blossoming.

Most orchardists begin applying the codling-moth spray when about three-fourths of the bloom has dropped. By this time the flowers have ceased to yield nectar, and are no longer visited by the bees. The stigma in the flower-cup has dried up, and no harm results from the spray falling on the blossom:

The greatest danger of poisoning the bees lies in the fact that most orchardists use some variety of clover, either singly or in mixture, as a cover crop; and about the time for the third summer spray this clover is in full bloom. At this spraying, arsenate of lead is used to control the second brood of codling moth, lesser apple-worm, and other leaf eating and chewing insects. The poisonous spray falls on the cover crop, is blown across the middles between the trees, and every orchardist who has done much spraying will admit that as much spray material falls or is blown to the ground as sticks on the trees, and herein is where the trouble lies.

RED CLOVER UNDER TREES DWARFED.

Not much importance is attached to red or crimson clover as a honey-plant, and bees do not usually visit the blossoms; but the moisture taken up by the trees and the shade tends to dwarf the blossoms, shortening the length of the corolla till the bee is able to sip the poisonous nectar from the flower-cup. To obviate this trouble the orchardist should mow the cover crop just

previous to applying this spray. Several advantages are to be gained in this. He saves the bees, stops the loss of moisture that is being pumped out of the soil by the clover, and provides a mulch over the or-

chard that is needed at the right time. This mown clover can later be disked into the soil, which is a better method than turning it under green, preventing acidity of the soil.

Washington, Ind.

THE EIGHT AND TEN FRAME HIVES, AND HOW TO USE THEM

BY J. W. SOUTHWOOD

A few years ago it was thought that the eight-frame hive for comb honey and the ten-frame for extracted honey were the proper sizes for best results. But at present the minds of some, at least, are for a larger hive, especially for the production of comb honey. The claim is that a ten-frame hive will give better results than an eight-frame. While this is true with some colonies, and may be true with all colonies in some localities, the fact that many have the eight-frame hive, and, considering the expense of disposing of them and getting the ten-frame, it may deter some from making the change.

To obviate this some have advised placing another hive-body on top, that thereby the colony can build up by the use of the eight-frame hive. It is undeniably true that there are queens which, for best results, require more comb space for egg-laying and brood-production than is contained in the eight-frame hive. It may be the proper thing to do with some colonies, and it may be with all colonies in some localities, to give the added hive-body in the spring, at the proper time when the colony is building up; but in far too many cases this added room of eight frames for the production of comb honey may be too much. It would be quite likely that, before the added hive is filled, the honey-flow is on and the first super of sections is given, and, instead of the honey being all stored in the sections where it is desired, a part of it is deposited in this unfilled hive-body.

As a compromise, last season I prepared some ten-frame hive-bodies, and when a colony built up until it was strong I made an examination; and when I found that the queen was needing more comb space for egg-laying I lifted out the frames and placed them in a ten-frame hive in the same position they held in the hive from which they were taken; and on each side I placed another comb. It so happened that I had two colonies that were queenless and contained laying workers with but few old bees and but little honey, and so I used these combs. When the last two combs were

taken out, what few bees were on them were shaken in front of the colony to which I gave the combs. I had intended to use frames with full sheets of comb foundation; but as it so happened that I had the combs, I used them instead.

When the flow came I put the eight-frame supers of sections on these ten-frame hives, placing a strip of lath at each side of the super to cover the space left open by the super being narrower than the hive. When these colonies swarmed they were hived in eight-frame hives on the old stand, and the super, or supers of sections, were taken from these ten-frame hives and placed at once on the new colony with a queen-excluder beneath.

This method gave the queen the necessary room, and thus gave more populous colonies than there would have been if left in the eight-frame hives. It retarded swarming; so when they did swarm, the swarms were larger than they would have been if they had been left in the eight-frame hives. Some colonies that were left in the eight-frame hives gave more section honey, perhaps, than they would have given if they had been moved into ten-frame hives, as the queen had all the space that she needed for brood-rearing, and what honey would have been placed in the two side combs went into the sections. The method gave such satisfactory results that I am intending to try it again the coming season. Whether these two combs should always be placed at the sides, or whether one should be placed at the side where the comb containing more brood and eggs than the other is located, and the other somewhere in between some of the other combs, may be a question. Not only hive conditions but weather conditions should be considered. It might be safer for the beginner to put the combs at the sides.

With this method the eight-frame hives need not be discarded, and yet get the benefit derived by the use of the ten-frame hive. Yes, and even better, as the eight-frame hive in some instances will give better results than the ten-frame, as I have already stated.

Huntington, Ind.

HONEY VS. SUGAR SYRUP

Does Sugar Contain all the Essentials for Rearing Brood?

BY J. E. CRANE

Dr. Miller drops a Straw on page 218 that appears to hold a considerable grain of value, and is well worth our consideration. He has gleaned from back numbers of German bee-journals that there is a belief in Germany that sugar is not as good for building up colonies in spring as honey, as honey contains several substances that are lacking in sugar that are essential in repairing waste in mature bees, and the rearing of brood. He mentions "invert sugar, pollen, ethereal oil, tannin, malate, tartrate, oxalate, and nitrate of potassa, different phosphates, manganese, natron, silica, sulphur, lime, iron," as necessary in the make-up of a bee's body. So it comes to pass that, where sugar is used in spring, bees are slow to build up until they can get honey from natural sources. In this country it is generally thought that sugar is just as good as honey. "Are the Germans right, or are we?" he asks. In common with others of America I have thought it made little difference whether the bees had honey or sugar in the spring, provided they had enough of it; but my experience last season set me to thinking I may be wrong.

This was my experience: Having had two poor seasons in succession I was a little short of a full stock of bees for winter, but had several hundred dry combs. Why not, after the clover went by and all hopes of surplus had past, divide strong colonies, using up my surplus combs, giving young queens and feeding thin sugar syrup to get a good supply of brood, and in October feed sugar syrup for winter? We made some seventy-five new colonies from twice as many old colonies. All seemed to work out about as we expected, except that we failed to get our hives filled with as much new brood in August and September as we had hoped, although they were fed with a thin sugar syrup, week after week with great regularity. There was some brood, but not enough to make strong colonies for winter. Was the cause sugar syrup instead of honey? It certainly looks that way.

On page 228 and 229 Mr. George Shiber tells how he prefers sugar syrup for wintering bees; but for building up in spring he says nothing equals "sealed combs of natural stores." Some years ago it was told somewhere that raw sugar was much better than refined sugar for stimulating bees to rear brood; and we find that such sugar

contains some five or more per cent of organic and inorganic compounds, while refined sugar is almost perfectly free of them. We all know that potash, phosphorus, lime, etc., are essential in building up healthy animal bodies, and it is to be presumed that bees are no exception to the rule. I reasoned that, as there was an abundance of pollen to be had during August and September, all that was needed was to feed regularly thin sugar syrup to imitate the nectar of the flowers. I could very cheaply build up a large stock late in the season when bees could do little else. I did not have the advantage of buckwheat or goldenrod, nor even swamps to any extent. Of the seventy-five new colonies, I believe scarcely any of them could be called strong, as they would if a good flow of honey had been coming during the month of August from buckwheat. The experiment was on a sufficiently large scale to be of some value. It seems to me now, as I look the experiment all over, that neither pollen nor syrup from refined sugar contains all that is needed for rearing brood rapidly. The pollen doubtless contains these elements to some extent, but not enough for the best results. I wonder if others have had experience along this line.

Middlebury, Vt.

A MEMORY

A Friend's Reminiscence Retold

BY GRACE ALLEN

The path to Mammy's kitchen winds
Amid the garden tangle;
And in between the hollyhocks,
Among old-fashioned four-o'clocks
And beds of marigold and phlox,
Stand hives at every angle.

The barefoot children leap and play
Like wind-tossed morning glories;
Then "Ouch! I'm stung!" and swift they get
Some grass or leaves or mignonette
And touch the place and so forget!
Such faith in Mammy's stories!

"Stung, Honey-chile?" black Mammy'd say,
"Well, don' you fuss an' tend it;
De Debbil's mebbe in de stings,
But God Hissself is in de wings,
An' in de grass an' blossom things—
A bit o' God'll mend it!"

Heads of Grain from Different Fields

Beeman's Laws

BY IRMA TRUE SOPER

The poets sing of the gentle spring,
The drowsy hum of bees;
"The world's in tune" the poets croon,
"With blossoms on the trees."
But the beeman knows, if his business goes,
He'll take the yoke and work;
He can't sit down nor hang "round town"—
He mustn't be a shirk.

It's the man who drives the nails in hives
And brood-frames all day long
Who doesn't swear nor tear his hair
When an orn'y nail goes wrong,
But yanks it out for another bout,
Then drives it straight and true,
Till the hives look trim and square to him—
His skies are brightly blue.

An aching back we will not lack
To speed him on his way;
While the sections fill the suppers till
They all are stored away.
It's the man who'll smile serene the while
A dozen stings he's found,
When he takes the bug from their cellar snug
And sets them on the ground.

He'll keep his grip till he makes the trip,
Nor pause to pull out strings;
By beedom's laws he must not pause,
Nor mind such little things.
So the poets sing of the gentle spring;
But there's work that must be done;
The beeman knows if his business goes
He'll mix his work with fun.

How Swarm Prevention may be Overdone

I am at home about two days in seven, and depend on my wife and neighbors to hive the bees when they are swarming. I was at home when they swarmed once. They swarmed every week the first two seasons, and all absconded. By reading books and journals I discovered that, by clipping the queen's wing and destroying queen-cells, I could stop the swarming. This was in 1913, the best season we ever had for honey—so say the writers. I had three very strong colonies which hung out in front of the hive. I raised the hives up on four bricks each; but still they did but very little work. I put a small super on each of the hives. They did not pull all the starters nor cap any of the combs. What can I do to make the bees work when the queen-cells are cut out every seven days, as in the above case? They did not swarm in 1913. My neighbors who let their bees swarm received 152 lbs. of comb honey per stand the same year.

Crestline, O. H. M. BROWN.

[Dr. Miller, to whom the above was directed, replies:]

You operated on the theory that, if you clipped the queen's wing and cut out all queen-cells every seven days, your bees would not swarm. The result was that, while your neighbors got 152 lbs. per colony, you didn't get a finished section. Something wrong somewhere. Let's examine your theory. If the queen's wing is clipped she will not go off with a swarm, because she cannot. To be sure, the swarm will issue just the same as if the queen could fly; but when the swarm finds it is queenless it will return to the hive unless, as sometimes happens, it joins another swarm having a queen with whole

wings. But that doesn't often happen, especially in a small apiary. Yet if the colony is left to itself a virgin will issue in about eight days, and with it off goes the swarm. You block that game, however, by cutting out queen-cells each week. In that case no swarm will go off with a virgin. How can it when there is no virgin for it to go off with?

Your theory seems to be all right, so far as it goes. It seems to be a case in which "a little learning is a dangerous thing," for your learning brought you out away behind your neighbors who were without that learning. Let's get after the rest of the "learning." First, let us inquire what likely happened with a colony treated as you treated yours. The swarm issued with the clipped queen, and returned. But there's no certainty that she returned. She may have been lost. If she returned, the swarm would keep issuing until she was lost, or until the bees, dissatisfied with her, balled and killed her. In any case, you may count on it that, when a colony with a clipped queen swarms and is left to itself, the clipped queen will disappear within a day or ten days. Even if the queen should be left in the hive as long as ten days, there will be practically no eggs laid in that time. Also, egg-laying had dwindled and practically ceased some time before the swarm issued. So within less than three weeks all recruiting from hatching young bees would cease; and with the bees dying off at the rate of a thousand, two thousand, or more a day, and a colony discouraged because their owner had destroyed all chances of another queen, it is easy to see that the prospect for a big harvest would go glimmering.

Even so, it seems that in so good a year the dwindling force of bees should have done more than they did at gathering surplus. In the first place, let it be considered that, while no eggs were being laid, each day young bees were hatching, leaving empty cells to be filled with honey, and in less than three weeks every cell in the brood-chamber except those filled with pollen would be at the disposal of the bees for storing surplus. The bees prefer the brood-chamber to any spare room above; and so, although a considerable surplus may have been stored, it was all stored in the brood-chamber.

There may, however, have been a change made in the program laid down that would have accounted for a much smaller amount of honey. It is not an easy thing to be sure that you have cut out all queen-cells. I've often seen them so hidden that the most experienced might be excused for missing them. You may have missed one. Then one fine day while you were fondly trusting that no swarm could issue, and so no watch was kept, out came a rousing swarm with a virgin and sailed away in the ethereal blue. And if you had been expecting any thing of the kind you might probably have noticed that all at once the bees ceased to hang out.

Well, you're not likely to be caught that way again; for you have learned that, while clipping queens and destroying queen-cells stops swarming, it also stops some other things, and there is something further for you to do. Understanding the difficulty, you may be trusted to study out what plan will suit you best to proceed; but it may do no harm for me to suggest one way.

If you want increase, you may shake a swarm as soon as you find cells well advanced; for I take it that your business allows you to see the bees almost daily, but not at the time of day for swarming.

If you want no increase, you may let matters proceed until cells are sealed and the queen is gone, or you may kill her. When sure the old queen is out of the way, kill every cell but one, and there you are with a colony having shortly a young queen,

and in the very best humor for the most vigorous storing. If you care to take a little more trouble, a little variation may be better. When the old queen is out of the way, leave the cells undisturbed. In less than a week after the first cell is sealed, the young queen will emerge. About this time go every evening and lay your ear against the side of the hive. As soon as the first virgin has emerged, you will hear her piping. No danger but you'll recognize it the first time you hear it—a shrill note long drawn out, followed by several other notes in rapid succession, each one shorter than its predecessor. You will hear the replies of her young sisters as they quahk in their cells. If still light enough you may act at once. If not, go next morning and kill all the cells in the hive. That's all; the bees will do the rest, for you have left the piping queen, which is now in full possession. This is better than destroying all cells but one, for in that case you may leave a cell with a poor queen, or even with a dead larva in it.

Marengo, Ill.

C. C. MILLER..

When is a Pear Not a Pear?

Dr. Miller, on page 177, refers to a statement made by some one that the alligator pear is worthless if allowed to ripen on the tree, and says the same rule holds good with nearly all pears. It does not seem to be generally known that the alligator pear, or avocado, is not a pear at all, nor any relation thereto. The pears belong to the apple family, the avocado to the laurel family, which includes sassafras and camphor trees, and several varieties of bay trees. The botanical name is *Persea Persea*; but lately the government botanists at Washington say *Persea americana* is the correct term.

I have never found that it made a particle of difference whether the avocado pears ripened on the trees or not. They should be eaten when mellow, not when the least bit hard, and not when overripe or mushy. They usually drop from the tree a few days before they are just right to eat. Of course, to ship them any distance they would have to be picked greener.

Boca Raton, Fla.

F. H. CHESEBRO.

Double Up the Eight-frame Hive

What shall I do with my two-story eight-frame hives of bees in the spring when running for comb honey? Let me explain: In the spring, soon after apple-bloom, I find my best colonies are becoming crowded. I then take brood from them and give to the weaker colonies as fast as I think they can cover and take care of the brood; but even then I had last season about twelve colonies that I apparently could not keep down. So I gave them an extra hive body and set of combs which they filled very quickly.

Now, I don't want to divide, and I have tried placing a super on top, when sometimes I get a small amount of comb built, but nothing like what I get with my strong one-story colonies. If I place a super between the two bodies, the sections that are finished are very dirty.

Has it been found to be of any particular advantage to go to the extra work of placing a small strip of foundation in the bottom of sections when the top strip or piece comes within about $\frac{1}{4}$ inch of the bottom?

Elkhorn, Wis.

W. L. SHERMAN.

[Where the eight-frame hive is used, the plan of making them two stories during the early bloom previous to the main flow is a good one. If a queen-excluder is not used it gives the queen room to lay to her utmost capacity, and will produce tremendous colonies of bees. This is what you want for successful comb-honey production.

Where the clover-flow comes on, remove the upper story and take from the lower hive the outside comb, which, when a two-story hive is used, will seldom be found containing brood, and take from the upper story sufficient combs of brood to fill the lower one clear full. It will now contain nothing but frames full of brood and perhaps a little honey. The queen should also be put into the lower hive. Then put on your supers. If one super will not hold all of the bees, then put on two or three. If the weather is warm, block the hive up from the bottom-board so as to give abundant ventilation below; and if weather conditions are right and the bloom in abundance you will be surprised at the amount of honey that will be stored. The honey from the remaining combs can be extracted and sold, or fed back.

By this system your hive will be crowded with bees and brood, and they will probably swarm; and yet colonies that are in such condition that they will go into the supers with a rush, especially if the honey-flow is heavy, sometimes will not swarm as readily as others that are not quite so strong. In case there is more brood than will go into one hive, about the only thing that you can do with it is to give it to other colonies, if you have such, that will take it, or make increase. It is practically impossible to produce comb honey on top of a two-story hive. This you have found by experience.

Your experience with placing sections between two hive-bodies containing brood is in keeping with that of other beekeepers who have tried that plan. It is a good place to get the foundation drawn out and storing started; but after that they should be removed. The cappings will always be discolored with material taken from the brood-combs.

It is a decided advantage to use a bottom starter. You can always be sure of the combs being securely fastened to the bottom of the section, which is not always the case where only a full sheet is used that comes within a quarter or half an inch of the bottom.—G. H. R.]

Making Division-board Feeders of Metal

My Doolittle feeders require repairing every year. Since the feeders are made of wood, they shrink, which, of course, causes a leak. Feeder testing and repairing has become quite an annual affair. I have been thinking that the feeders should be constructed of stout galvanized iron, then painted, and, while the paint is wet, apply very fine sawdust. The sawdust would take away the cold touch of the iron, for which it is known the bees have a strong dislike; and, from the standpoint of the bees, would be the same as a wooden feeder, the coarse sawdust also giving the bees a good footing when taking the syrup.

From the standpoint of the beekeepers there would not be any loss of time in testing and repairing, and, above all, there would not be the annoyance that is caused by a leaky feeder.

St. Albans, New Zealand. W. A. SILLIFANT.

But is Paralysis Caused by Pollen Constipation?

M. Y. Calcutt says, page 26, Jan. 1, that bee paralysis is caused by the bees becoming pollen-clogged. That being the case I can see where the cascaret would relieve them. But what I can't get through my head is this: If the bees are pollen-clogged, as he says they are, and giving them a cascaret will effect a cure, then how can it effect a cure to discontinue brood-rearing when they are storing honey in the supers?

Why would they not be pollen-clogged just the same after brood-rearing has been discontinued, and they are storing honey in the supers as before?

Council Grove, Kan. ROBT. N. ROWLAND.

A. I. Root

OUR HOMES

Editor

That we also may be like all the nations.—I. SAM. UEL 8:20.

Thou shalt not follow a multitude to do evil.—EX. 23:2.

Thou shalt not covet.—EX. 20:17.

Thou shalt love thy neighbor as thyself.

—LUKE 10:27.

In our recent Sunday-school lessons we have been considering the people who wanted a king, and they petitioned the prophet Samuel until he, by Jehovah's direction, consented to give them a king, but at the same time made vigorous protest by telling them how it would turn out. A startling truth confronts us here. God, at least sometimes, grants importunate prayers by letting us have things not best for us. We should always preface such prayers by something like this: "O Lord, grant this petition, only if thou seest it will be best for us and humanity at large."

Again, the reason the people gave Samuel for wanting a king was because it was "the fashion." Because other nations, perhaps heathen nations, had kings, *they* wanted a king. They wanted to be like "other folks." This is all very well if the "other folks" are in the "straight and narrow path." Even at this present day it is sometimes a very *easy* thing to "follow a multitude to do line."

Before taking up our two other texts I want to tell you a little story of my early boyhood. It happened so long ago I shall have to "fill in" a little; but it was substantially as follows:

Between 60 and 65 years ago *marbles*, instead of baseball, was the fashionable game. As soon as it was warm enough in the spring, all the boys (and some of the girls too) were playing marbles. I soon became tolerably expert, when some boy came among us and taught us how to make the game *more* interesting by playing for "keeps." To my great dismay, however, my good mother forbade my having any thing to do with that kind of game. It soon got such a run that the boys could hardly be kept in school, and all home duties and "chores" were neglected. It soon got out that *my* mother forbade *me* to do more than look on. Have you ever been there, dear reader? Can you still remember the looks of the "bully" of the crowd as he stands before you and says:

"Sonny, is it true that your 'ma' won't let you play? Better run right home; you might get hurt, or get in with 'bad boys.'"

And can you remember how the crowd hooted and "hollered"?

I said to mother, "Why, mother, every

single boy in school plays for keeps, and their mothers don't say a thing about it. Why can't I play, and be like the rest?"

After much like importuning she finally said:

"All right, Amos, you go and play, and see if you will be any happier; but please come and tell mother how it turns out."

I soon found two boys who were willing to play, and one of them was my best and most intimate friend. I very soon had all the marbles from both boys, and went home to show mother how much I had "gained" so quickly. Her next question was:

"What did Ariel say, when you won all his marbles?"

I hung my head; but when pressed I replied:

"Why, he got mad first, and said I cheated; and when I got his last marble he cried."

She put her loving arm around me and said, in a very low but kindly voice:

"My boy, don't you think you will be far happier if you run right over now and give the boys their marbles back again? You didn't *buy* them; you didn't give them *any* equivalent. You have all this bagful that you don't need and don't want, and they have no marbles at all."

I think I must have been barefooted and bareheaded as I scampered to both boys' homes and saw them both look, not only happy but friendly, and I made just restitution. May God be praised for that wise mother, and for the fact that that early lesson has lasted me sixty years or more. I do not think I have ever since taken any thing in any game of chance, and I believe I can say almost as much for our five children and ten grandchildren. Mother cured *me* as God tried to cure the uneasy and rebellious people who wanted a king because "other people" had kings.

While the incident above cured me from *gambling* it didn't seem to cure me or keep me from the craze for "gift enterprises." When I was about 25, and kept a jewelry store, a firm in Buffalo, N. Y., with whom I had dealt, sent me a box containing 100 packages to be sold at 25 cts. each. Each little box contained four papers of needles and a prize or gift. These gifts were valued at from 10 cts. to a \$10 watch. Very soon the store was crowded. It was like a lot of bees around a piece of honeycomb. The excitement was soon such that poor people bought needles enough to last them

forty years or more. The first box went so quickly I wired for a second. I don't recall where my good mother (or wife?) was just then; but here is lesson *No. 2* that God sent me:

A washwoman whom I knew came into the crowd with about a dozen broken packages and a lot of jewelry. I distinctly remember among the lot a gold(?) locket and neck-chain said to be worth *ten dollars*. She broke right in through the crowd and said something like this:

"Mr. Root, you probably know that my husband and I have hard work to get along and care for ourselves. Well, we had just scraped up money enough to get a sack of flour, and I trusted the poor old man to go up town and get it. This crowd you see here persuaded him, if he bought your needles, he *might* get a gold watch that he could swap for several sacks of flour. Now, here is what he brought home instead of the flour. What does the like of us want with these trinkets? If they are of any value to anybody, you know how much and what to do with them. Will you kindly excuse my poor old man and take these and give me the money to get the flour?"

I was not a professing Christian then;

but I shut up the box and told the firm that sent it they could allow me what they chose or nothing, and from that time to this I have tried to steer clear of "prizes."

Just about a year ago a young beekeeper paid us a visit. Between here and town some lots were sold at an auction. A little girl gave out cards. Our young friend took one of the cards from the child, and it happened to be worth \$20 on the purchase of a lot. He didn't want any lot; but a man who expected to buy one gave him, I think, \$15.00 for it. So he made a visit to A. I. Root and gathered in quite a few "shekels" on the way.

If I am rightly informed, something similar is going on most of the time down here in Florida, and perhaps in many other places where there is excitement about real estate. I feel sad when I see it or hear of it, and sadder still when I meet so many who seem to think no harm may come from that way of doing business. If nobody wanted (or coveted) anything without rendering a fair equivalent, what a happy world this would be! and if everybody really loved his neighbor as himself, God's kingdom *would* come, and his will *would* be done on earth as it is in heaven.

HIGH-PRESSURE GARDENING

HOW TO MAKE "THINGS" GROW.

I have been expecting some of you would complain because I, as I grow older, get to telling the same thing "over and over." I have heard no such complaint as yet; and when it comes I am going to "come back at you" with the declaration that there are things that *should* be told "over and over," and what I am going to talk about is *one* of the things.

Perhaps thirty years ago it was, when one of my hobbies was the growing of vegetable-plants for the local trade around Medina. The plants were grown in shallow boxes about a yard long and 16 inches wide, and about 3 inches deep. We first put in a layer of old well-rotted stable manure, and on this some rich sifted garden soil; and when we were short of plants, and it was desirable to rush them along, we sifted in a little guano. Well, when the weather became real warm, say in May, we found the flea-beetle was getting bad on our young cabbage-plants; and reading in a paper that slaked lime, or lime water, would head them off, I told the boys to sift some lime into the soil before they sowed the seeds, and then forgot all about it. In

a day or two my attention was called to a box of plants of such luxuriance and dark rich color that I uttered an exclamation of surprise. The first seed-leaves of the cabbage were larger than any thing I had ever seen; and when I began making inquiry I was told it was the effect of both lime and guano. Then I began to explain to the interested crowd that the lime had probably liberated the ammonia in the guano at just the time the sprouting seeds needed it, when one of them exclaimed:

"Ammonia? I should say so! When I sprinkled the box with warm water, as you told us to do, after sowing the seeds, it smelled like a bottle of hartshorn or smelling-salts."

After we had tested the matter so we were satisfied we could get the same result *every time*, I said to the boys something like this:

"Boys, if some one had come along here and showed me a box of plants like these, and had offered to sell me the secret for a *hundred dollars*, I think I should have paid it at once."

Well, we grew plants in that way for several years; and if I remember we gave

it up only when guano seemed to be out of the market. Yes, good poultry manure will give a similar result, but not so marked. You may recall that when Prof. Thorne, of our Ohio Experiment Station, said so much about lime for sweet clover and other legumes I recalled this incident.

Well, since our supply of potash has been recently cut off (here in Florida, especially), attention has been called to guano; and remembering my experience of years ago I sent to Crenshaw Bros. Seed Co., of Tampa, for a 100-lb. sack of guano, and commenced experimenting. It cost \$3.85 for the 100 lbs. I first tried it on a bed of radishes. By the way, when you set a hen always sow some radishes at the same time. They will be then just right for the chicks when they are three or four days old, and they will soon clamor for them more than for almost any thing else. With a sharp knife shave off the tops from a bunch held in the left hand. The mother hen will instruct them.

The radish-bed was manured and fertilized, and then covered with sifted slaked lime until the surface looked white and then raked in. Just before the seeds came up a little guano was sifted on one spot across the rows; and the dark rich color and larger plants in a streak across the bed show the effect. Part of a row of onions shows the same thing; but the finest "object lesson" is a row of peas 30 feet long. I put about a teacupful on five feet at one end, and hoed it in carefully. After the first rain they took on a decidedly different color; and now when the 25-foot untreated part of the row is turning yellow, the remainder is a dark thrifty green, and Mrs. Root says she has picked more peas from that *five feet* than from the whole 25 feet that had no guano. *One cent's worth* of guano must have given five or ten cents' worth of peas to make a rough estimate. I tried it all over the garden in a similar way; and while the results are not all so pronounced, I feel sure that, used judiciously here in Florida, it is going to be of great benefit. On a few things, where the weather was too cold and wet, and possibly because I used too much, or got it too close to the plants or seeds, I killed the plants. Like many other new things you will need to experiment until you get acquainted with it.

As many of you will doubtless be inquiring where you can get it, especially a small sample, I am going to do some "free advertising" by clipping from an advertisement I find in the *Florida Grower*:

Write for free sample (enough for 40 square feet) genuine Peruvian Guano, Nature's most wonderful fertilizer, the greatest crop-producer known. Nitrate of soda. NITRATE AGENCIES CO., Savannah Bank Building, Savannah, Ga.

Perhaps I should add that all soils are not alike; and while guano gives great results on mine it may not on yours. Make careful tests on your own ground before you invest in fertilizers of *any* kind. And permit me also to add that our best authorities declare "soil analyses" amount to little or nothing. You must find out by careful tests on your own garden what *your* land needs.

At this date, March 2, we are digging the nicest Bliss Triumph potatoes we ever grew. While old potatoes are advertised at 20 cts. a peck we are getting 50 cts. Besides our poultry manure, we have used on our half-acre garden about 500 lbs. of Mapes' special potato manure at a cost of about half as much as guano, but at present we think guano is cheaper.

A NEW "DAILY BREAD."

Last October, our good friend Henry Borchers, of Laredo, Texas, sent a clipping from the (Sunday) *San Antonio Express*, with a heading "Discovered—a New Bread that will save Southwest Texas Millions." I read the article, but as I have had reason to take "discoveries" exploited in Sunday papers with a little caution, I paid but little attention to it. When I saw later that "feterita," the new bread-producing plant, was cataloged as cheap feed for chickens, I began to "take notice," and when I saw the following in such a reliable journal as the *Farm and Fireside*, I took more notice.

Kansas had 135,800 acres of *feterita* in 1914, and yet it sprang into prominence in Kansas only last year. Besides its dry-weather-resisting qualities and early maturity, the feeding value of its grain is pronounced as practically the same, pound for pound, as that of kafir and milo. Kansas certainly snaps up the good new things.—*Farm and Fireside*.

Will some of our Kansas readers tell us if the above is really a *fact*, or is there a mistake in the figures?

Well, *feterita* is now growing in our garden; but it has been so *cold and wet* during the whole past winter (over *three times* the normal rainfall), it hasn't looked happy, nor grown very much; but whenever the sun comes out warm it brightens up vividly.

At my solicitation friend Borchers sent us some *feterita* flour and (as he is a baker) also some *feterita* bread and cakes. Breakfast food made of the flour, with some nice honey, suits me to a dot, and the *cakes* are also fine; but so far the bread does not strike me as an improvement on

the graham bread Mrs. Root makes of home-grown and home-ground wheat.* I applied to the Department of Agriculture, and received an eight-page bulletin, put out in 1914. From the last page I clip as follows:

SUMMARY.

Feterita is a sorghum from the British Egyptian Sudan, in Africa. It is a durra, related to white durra and to milo, with slender stems 4 to 7 feet high under varying conditions, erect heads, and large, rather soft, white grains.

Extravagant claims have been made for feterita by uninformed or interested persons. Experiments show it to be a good grain and forage crop, but not in any way meriting extraordinary praise. It has proved about equal to milo in yield.

All cultural operations are much the same as for milo and kafir, though certain differences are pointed out.

Feterita is newly introduced, and quite variable; therefore seed selection and improvement should be practiced in each district where it is grown in order to obtain adapted strains.

NOTE.—Since the first edition of this circular there has been considerable advertisement in Oklahoma, Kansas, and Texas of a sorghum under the name of "Schribar Corn." An examination of samples submitted to the Department of Agriculture has shown this to be nothing but feterita.

This bulletin makes no mention of it as a *bread-making grain*. Sixty years ago, when mother and I were making garden, I got from the Department of Agriculture a few seeds of "sorghum," the new Chinese sugar-cane that would grow in the North. In due time, with a home-made mill, we had "sorghum syrup." Just as usual (even at that early age), I was delighted with the new sweet, and am yet, when I can find some well made. Well, I have a dim recollection that I ground some of the mature and dried seed in the coffee-mill, and had "cakes and syrup" made of the wonderful new plant. The rest of the family, however, didn't seem to "enthuse" very much over my "great discovery."

* Since the above was in type we have been making sour-milk pancakes one-half feterita flour, and I think them fully equal to buckwheat.

In summing up, if feterita should enable us to grow chicken feed here in Florida, to take the place of wheat, it *will be* a great thing for us. We are already using kafir corn with good results, especially for little chickens.

Feterita can be grown successfully in Ohio, for The Livingston Seed Co., of Columbus, have grown it, and think so well of it they give a fine picture of a head of grain on the cover of their 1915 catalog. All reports seem to agree that it stands severe and long-continued drouth better than any other grain, and perhaps better than any other plant. It yields from 25 to 75 bushels per acre.

DASHEEN; KIND OF SOIL NEEDED, ETC.

Mr. Root:—Last year I took home (to Glen Falls, N. Y.) a quantity of dasheens, but was not satisfied with results. While they grew fairly well, by the time the fourth leaf was growing the first one would fall, and their color was never right. Can you tell me what particular kind of soil and fertilizer they need? I cannot learn from any one here. They seem to think they will grow "any old way," so, like a multitude of others, I am troubling you.

Orlando, Fla., March 22. MAY G. DEVINE.

My good friend, I regret that I cannot tell you why your dasheens should act in that way. We have no trouble here in Florida, nor in our heavy clay soil in Medina, Ohio. I think a rather damp sandy loam is best, and there should be plenty of humus in the soil—say plenty of old well-rotted stable manure, and plenty of water, at the same time providing good drainage.

THE DASHEEN IN YORK STATE.

The dasheens are received, also Rainbow corn. One of the dasheens grew last year, and was fine. It "harvested" it Oct. 26 and ate it *all*, and found it very good.

MANLEY E. BRUSH.

Hammondsport, N. Y., March 17.

My good friend, you say "*it*." Was your harvest only one tuber? You should have had a dozen, big and little.

HEALTH NOTES

OXYPATHOR DENIED THE USE OF THE MAILS.

We clip the following from the *Rural New-Yorker* of March 27:

I am tormented by an agent for "Oxypathor," which I have known to be a fraud for over 25 years.
New Jersey. DR. C.

The doctor will not be tormented any longer. A fraud order has been issued by the Postmaster General denying the use of the mails to the "Oxypathor Company" of Buffalo and allied companies with offices at Columbus, Ohio, and Wilmington, Del., on the ground that these concerns have been defrauding the public on an enormous scale for the last six

years. An appliance was offered by the company which it was claimed transmitted oxygen into the human body and was advertised to be a cure for practically all forms of disease. The promoters were held to be "conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses." Postoffice inspectors find that in six years, from 1909 to 1914, inclusive, 45,451 such machines were sold at \$35 each, aggregating \$1,590,785. We have frequently advised against the use of this and similar appliances. Some three years ago the Oxypathor Company gave us the privilege of accepting oxypathy, "if you like, otherwise it will wipe its feet on you." It seems the Postoffice Department has made better use of it, and the Oxypathor has become the door-mat.
J. J. D.

Our older readers will recall that GLEANINGS has been fighting this thing (almost single-handed until the *Rural New-Yorker* stepped in), for more than 20 years, and we have been repeatedly threatened with "suits at law" by the different promoters of the "senseless toy." Not only that, but I have, every time I have shown it up, made some man or woman an "enemy for life," it would almost seem, because I continued to declare there was "neither sense nor science" in running "oxygen" through a wire. Just think of it—over a *million dollars* has been paid for it by sick and ailing people! It just started at \$25.00 for a senseless rig that could be sold at a profit at 25 cts.; and as if *this* were not a big enough profit, the price has recently been raised to \$35.00. The miserable thing has also been copied, again and again, by some vender.

Some one who had no scruples about "robbing sick people," seeing the money the "promoters" were getting, copied the thing, hence the various names for it. Some years ago I appealed to the authorities at Washington, D. C., and they sent a man to investigate; but as they didn't claim it to be a medicine he said there seemed to be no law to stop such cases. Yes, they did have a sort of *patent* granted for it, as a device that cured people by working on their *imagination*, etc.

Now, friends, there is a big moral right here that we all ought to recognize. Dear kind old Dame Nature is all the time working cures, did we but stop and recognize it. When we are feeling badly, if we go to a doctor or get something in a bottle at the drugstore, and suddenly recover, we of course give the doctor or the medicine the credit. Just 24 hours ago I took a sudden cold—almost the first severe cold since I omitted a regular supper four or five years ago, took a daily bath, etc. I had sore throat, earache, with droppings from my nostrils almost continuously, etc. Next day I had a good nap before dinner, but still felt so badly I thought *after* dinner I would really have to go to bed and stay there, and perhaps would have done so had it not seemed quite necessary I should take a trip out into the country. Well, while writing this (just before bedtime) my cold is all gone; my nostrils are clean and free from congestion, fever, etc. What did it? I don't know unless it was the ride, well bundled up, out in the Florida sunshine. Suppose, now, I had had an electropoise, and had gone through with their senseless rigmarole. What a *testimonial* I could have *honestly* given! Shall we not investigate, and try things? Sure! But take a lesson

from our various *experiment stations*. Go and visit them if you have never done so, and learn how *they* make test experiments over and over again before they accept conclusions and give the results to the world. The station folks are honest, and have no ax to grind—no object in life, except to benefit humanity.

"OLD AGE DEFERRED." FROM A GOOD FRIEND WHO WAS AN "INVALID" 30 OR 40 YEARS AGO.

Dear Bro. Root:—I have been thinking of writing to tell you that, although I am getting near my 83d birthday, I did lots of work last summer and fall—more than usual, as I have had some of our houses to repair, and the outdoor work has improved my general health very much.

As I tell it, I have spent \$200 or \$300 on the houses, and have received *one hundred dollars* in health. I am very much interested in the Home department, especially poultry and health. Mrs. Axtell's article pleased me very much. I have been for some years rubbing myself (or massaging) all over when I wake up in the night, and sleep always comes, though sometimes I massage for half an hour or more before sleep comes. I also practice deep breathing with very much benefit. I do it nearly every night.

I was interested in what you said about your daughter's Plymouth Rocks. I have one little pullet, said to be a cross between a Rhode Island Red rooster and a Black Minorca hen, which laid 28 eggs from Nov. 22 to Dec. 22. She has laid ten eggs more up to to-day, Jan. 5. I think she is something like your Buttercup, as she comes out to me, following me around and talking, and I talk back to her. I feed her extra on wheat at \$2.00 a hundred, and she eats out of my hand. We get 50 cts. a dozen here now for fresh-laid eggs.

Billy Sunday did a great work here, and I doubt if the state would have gone for prohibition but for him. He seems to have done a greater work in Des Moines, Iowa. Bible classes were started all over the city, and are still kept up. Fifty doctors organized a prayer-meeting among themselves.

Denver, Colo.

J. L. PEABODY.

"BOTH BOUND FOR THE HEAVENLY SHORE," ETC.

I recently dreamed twice in one night that I met you traveling through the country, and felt very fortunate to have a few minutes' talk.

I trust the time is coming when it shall not be limited to "a few minutes."

We are both bound for the heavenly shore, and no doubt soon will meet.

I sometimes wonder if you have trials and difficulties like myself, and if you always know just what to do. I am a class leader, steward, Bible-class teacher, and sometimes organist. I have almost three miles to go up hill to church, and have to walk all winter over terrible roads, and often through rain. I am 54 years old, and am bothered a good bit with rheumatism, and it is not the easiest task for me to get up there. However, I don't mind all the hardships. I am doing it for Christ's sake, and don't want publicity or pity. But what does hurt me is that people so seldom respond. I can't see that I am accomplishing much. I have, however, one satisfaction—my own dear children are trying to serve God.

Laurel, Oregon, Feb. 24.

S. PARR.

My good friend, "Be not *weary* in well doing, for in due time we shall reap if we faint not," and also remember who it was that said, "Inasmuch as ye have done it unto the least of one of these my brethren, ye have done it unto me." Yes, my good and patient friend, I do have trials, and I often wonder if others have as many; but had these trials not come I should not have found my little short prayer, "Lord, help."

TEMPERANCE

SEE FINISH FIGHT ON LIQUOR ISSUE IN 1916
CAMPAIGN.

I copy the following from the Cleveland
Plain Dealer:

The results of the prohibition movement since
December 22 are:

ALABAMA.—Legislature passed a prohibition law
to go into effect July 1, 1915. Bill repressed over
the governor's veto. It limits to one quart a month
the amount of liquor that may be received by one
consignee, and prohibits liquor advertising in news-
papers, on billboards, and otherwise.

ARKANSAS.—Legislature enacted prohibition to be
effective Jan. 1, 1916.

IDAHO.—Legislature has submitted the question
to voters for election of 1916. Governor since has
signed prohibition measure to become effective Jan.
1, 1916.

IOWA.—Legislature repealed the mulct law, leav-
ing prohibition effective after Jan. 1, 1916. It is
certain Iowa will vote on constitutional prohibition
next year.

MONTANA.—Legislature submitted question to be
voted on next year. Legislature desires the bill sub-
mitted should make prohibition effective Dec. 31,
1918, but the prohibitionists have refused to accept
it, contending the date be Dec. 31, 1917.

NORTH CAROLINA.—Legislature passed law pro-
hibiting delivery of intoxicants in state even for
personal consumption.

SOUTH CAROLINA.—Legislature submitted ques-
tion to voters for decision in 1915.

UTAH.—Both branches of legislature have voted
to submit prohibition to voters.

COLORADO.—Legislature has enacted laws to en-
force prohibition after Jan. 1, 1916.

MINNESOTA.—Legislature has put local option in-
to effect.

PENNSYLVANIA.—Legislature is considering local-
option bill.

NEW JERSEY.—Legislature is considering local-
option bill.

The states in which prohibition is in effect or
where statewide prohibition measures have passed,
but are not yet in operation are:

Alabama, Arizona, Arkansas, Colorado, Georgia,
Iowa, Idaho, Kansas, Maine, Mississippi, North Car-
olina, North Dakota, Oklahoma, Oregon, Tennessee,
Virginia, Washington, and West Virginia. Total
—18.

The action of the North Carolina legislature, fol-
lowing close on the West Virginia court decision
which places an embargo on alcoholic liquors, is
regarded here as a startling development. A bill
has been offered by the speaker in the Kansas house
of representatives to shut liquor out of the state.

GOD'S KINGDOM COMING.

Our good friend J. E. Miller, of Home-
dale, Idaho, sends the clipping below, and
adds, "Praise the Lord." Can we not all
join with him in his brief "Methodist
shout"?

The statewide prohibition bill which makes Idaho
absolutely dry after January 1, 1916, was signed by
Governor Alexander at 3 o'clock last Monday after-
noon. The office of the chief executive was crowd-
ed with temperance workers from all parts of the

state who desired to witness the official ceremony
that came as a culmination and a victory from their
efforts of several years.

Two pens were used by the governor in affixing
his signature to the bill. One pen was presented
as a souvenir to Mrs. W. S. Chipp, of Boise, the
president of the Women's Christian Temperance
Union of Idaho, and the other was handed to W. J.
Herwig, state superintendent of the Anti-saloon
League.

Praise the Lord!

SIGNIFICANT FIGURES.

From the last United States census we learn that
the wet state of Nevada had, in 1910, 353 prison-
ers for every 100,000 of her population, while her
dry neighbor, North Dakota, had 63. Nevada had
194 paupers for every 100,000 population; North
Dakota, 14. Nevada had 282 insane people for
every 100,000; North Dakota, 108.—*Home and
State.*

SOME EXTRAVAGANTLY KIND WORDS FROM A BROTHER
IN FLORIDA.

Dear Friend:—I am trying in my poor way to
keep up with your papers called *Our Homes*, as they
are of much importance to me. I find myself without
words in stock to express to you how I appreciate
the feasts it brings to my soul. They are just sweet,
for I am sure that they have been given to you
from a higher power than mere education. "Lord,
help!" means much. I realize this as being a more
than true fact, if, possibly, "Lord, help!" has been
heard by the loving Savior many times. I can say
of a truth that Jesus does answer prayer.

Now let me suggest to you that Jesus is a polite
clerk for God's great storehouse of goods, and is
just ready and waiting for a customer to rap, or
ring the phone bell, and then "right then the goods
are delivered"—no climbing up and down the
shelves to look for the number the customer calls for.
Jesus is fully up to this wonderful house of plenty,
and, best of all, he does not *cheat* customers who
deal with him. When once a man gets *acquainted*
with this wonderful Jesus (the principal clerk), he
never becomes displeased, for he knows just what
size of garment and style will fit, and he can see
you, even away down the dark road, coming to pur-
chase a wedding-garment. Just call over the phone,
and your order will be filled that same day. In
fact, I believe I can say Jesus (without fear or
doubt), will even fit it on you before you can hang
up the receiver.

I trust you will not think me boasting when I tell
you I ordered a robe of righteousness, pure and
white, washed in the blood of the Lamb; and, praise
his holy name, it just suits me; and, best of all, I
feel sure that I can wear it six days in the week,
and then it is also ready for Sunday service. Thank
God for his promptness in filling the order. He has
been a friend to me. I am sure if either of those
skeptics you referred to will call for a Christlike
"tailor-made" suit, so to speak, and call in *dead
earnest and faith*, Jesus can please them, and they
will be *ashamed* of the one they are now wearing.
Can't I hear you say, "Amen, amen"? May God
help you in this contest with such characters as
you are now having to contend with. Dear brother,
you have got *my vote in the contest*.

I want you to pray for me, and faint not. Ask
God, in his all-seeing and all-knowing power, to
deliver me. This is a wonderful knowledge, if it is
his will, for me to know and understand his biddings
and the scriptures. "For in them ye think ye have
eternal life, and they are they that testify of me."
Pray for me. I need the prayers of all God's dear
children. I thank God, time after time, for just
such men as A. I. Root.

Sanborn, Fla. Oct. 12. CHARLEY C. LANGSTON.